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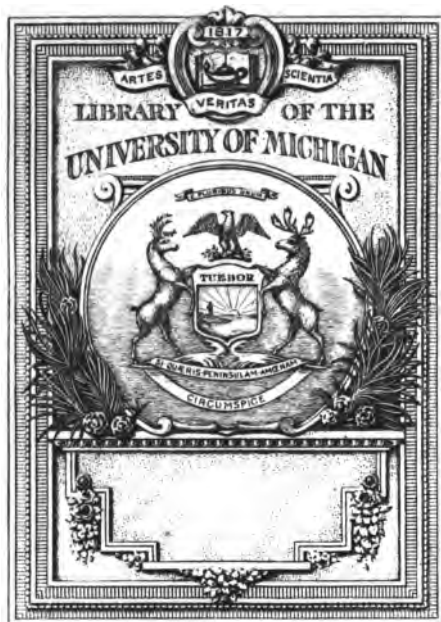


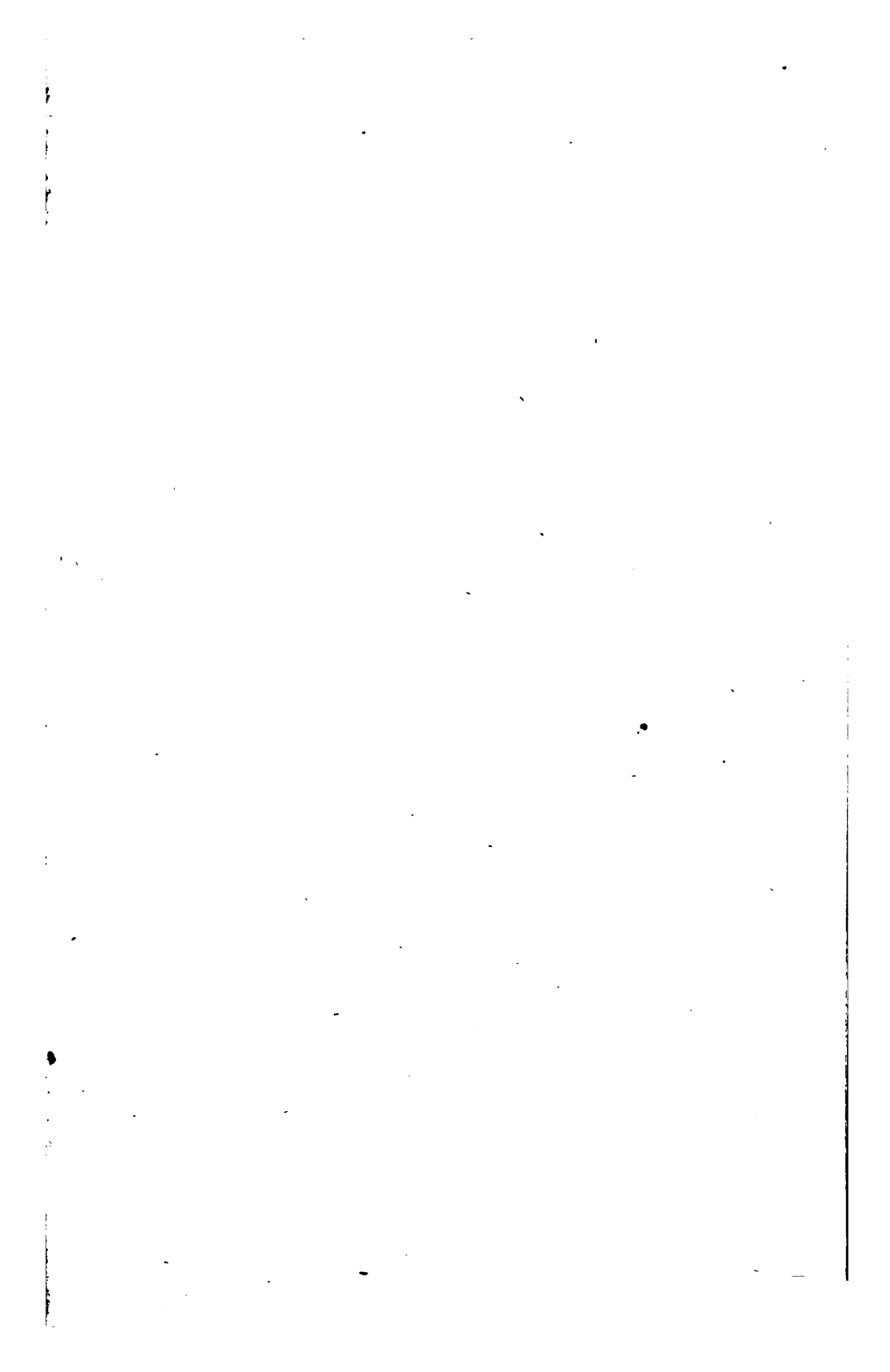
John Harvard.

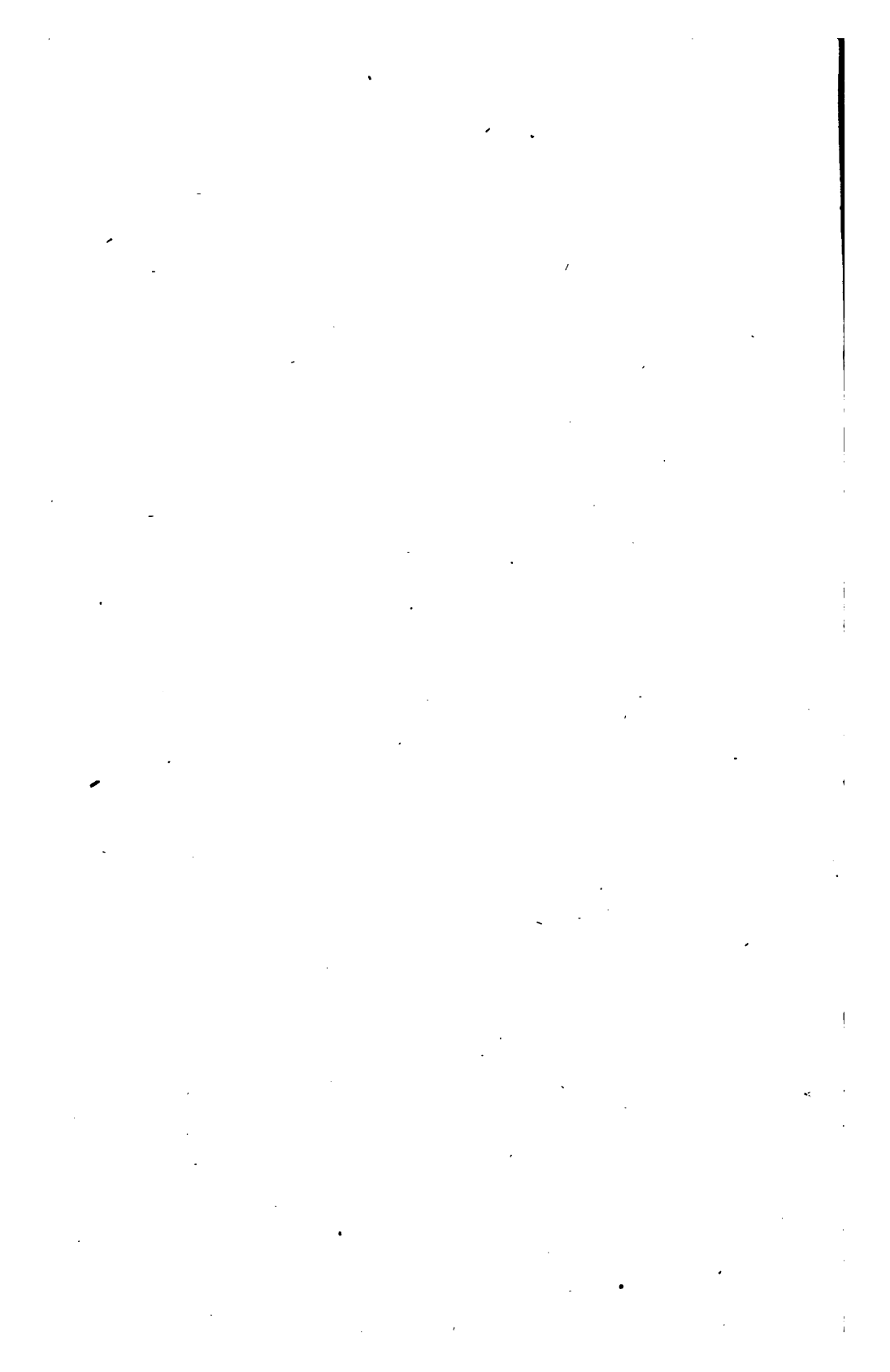
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THE ANALYST.

MEMOIR OF SIR HANS SLOANE, BART.,

FOUNDER OF THE BRITISH MUSEUM.

A SKETCH of the useful life of this illustrious physician and naturalist, cannot but be acceptable to our readers, at a time when the proposed improvements in the British Museum, detailed in the recent report of the committee of inquiry, form the general topic of conversation in the scientific and literary circles of the day. It has been compiled principally from contemporary writers whose authenticity may be relied on.

Sir Hans Sloane, Bart., was the son of Alexander Sloane, who was placed at the head of a colony of Scots which James I. settled in the north of Ireland, and the subject of this biographical sketch was born, on the 16th of April, 1660, at Killileagh, in that district. He discovered a strong inclination for natural history, even in his infancy, and devoted those hours generally employed by young persons in trifling pursuits, to the study of nature, and the admiration of her multiform and attractive productions. At the age of sixteen, he was seized with a spitting of blood, which interrupted the regular course of his studies, and confined him to his chamber for three years. He had already acquired enough of the healing art to know that such a malady was not to be suddenly cured; and his prudence directed him to abstain from any stimulant that might tend to increase the disorder. By a strict regimen adopted at this time, and which he afterwards always observed, he was enabled to prolong his life beyond the ordinary bounds assigned to the age of man; being himself an example of the truth of his

favourite maxim, "That sobriety, temperance, and moderation, are the best preservatives, and the most powerful that Nature has vouchsafed to mankind."

He had scarcely recovered from his first attack when his desire to pursue his medical studies (the profession he had selected) induced him to visit London, for the purpose of obtaining advantages in this way which he could not hope to find in Ireland. Soon after his arrival he placed himself with Stafforth, the first chemist of the day, who was brought up under the illustrious Stahl; and by his instructions he became perfectly acquainted with the nature and preparation of the various articles which formed the *materia medica* of that period. He also studied botany at the Apothecaries' Garden, Chelsea, which had been opened in 1673, for the benefit of young students. He attended all the public lectures on anatomy and medicine then given in the metropolis, and neglected nothing which had any reference, however remotely, to the profession in which he had embarked.

But he was no less distinguished as a *naturalist* than as a physician. His enthusiasm for this interesting study introduced him to the acquaintance of Mr. Boyle and Mr. Ray, and to them he communicated every striking fact or object of curiosity that came under his observation. His intimacy with these two great men continued till their death, and his remarks often excited their wonder, and obtained their unqualified approbation. After four years intense study in London, Mr. Sloane resolved to visit foreign countries, for further improvement. With this view he set out for France, accompanied by two other students. Having been at Paris, where he attended the lectures of the celebrated Tournefort, and other eminent professors, and visited the literati and the scientific, he directed his steps to Montpellier, where he spent a whole year in collecting plants, and in pursuing his botanical studies. He returned to England in 1684, with the intention of pursuing the medical profession, at the early age of twenty-four. Immediately on his arrival he visited his illustrious friends Mr. Boyle and Mr. Ray, and to the latter he transmitted a variety of plants and seeds, which this author has described in his *Historia Plantarum*, with proper acknowledgements.

Soon after his return from abroad, Mr. Sloane was elected a Fellow of the Royal Society, and, in the year 1687, of the College of Physicians. This last election happened on a very extraordinary occasion, of which we think it worth while to give a short notice. At a meeting of the Society on the 19th of October, 1685, the pre-

sident, Sir Thomas Witherley, one of the king's physicians, having acquainted them that a writ of *quo warranto* was to issue against their charter in the next term, it was put to the vote and carried *nem. con.*; that the College should themselves deliver up their charter into his Majesty's hands; which surrender was subscribed by all the Fellows. On the 29th of March, 1686, the president acquainted the College it was his Majesty's pleasure that the number of Fellows should be increased from forty to sixty or eighty; and on the 12th of April, 1687, the Diploma of King James II. was brought to the College, and solemnly accepted by the Society, and thirty new Fellows were that day admitted, among whom were Dr. Hans Sloane, afterwards the founder of the British Museum, and Dr. John Radcliffe, the founder of the celebrated library at Oxford. Dr. Sloane, some time afterwards, took an opportunity of bearing witness to Dr. Radcliffe's great merit as a physician. In order to express his utter contempt of those who seek to depreciate the talents of their contemporaries, he observes, in the Introduction to the second volume of *The Natural History of Jamaica*, that such shallow persons would "needs persuade him that Dr. Radcliffe could not cure a disease, because he had seen a recipe of his where the word *pilula* was spelled with two ls."

When only in his twenty-eighth year, Sir Hans Sloane accompanied the Duke of Albemarle on his appointment to the government of the island of Jamaica, in the quality of physician, being chiefly induced by his attachment to natural history to undertake a voyage which was not thought, at that time, to be altogether free from danger. As he was the first man of learning whom the love of science alone had led from England to that part of the globe, and was, besides, of an age when both activity of body and ardour of mind concur to vanquish difficulties, his travels were eminently successful. To say nothing of the other curiosities with which he enriched his native country, he brought home from Jamaica and the adjacent islands at which he touched, no fewer than 800 different species of plants; a number much greater than had ever been previously imported into England by any individual. His stay in Jamaica did not exceed fifteen months, when the governor and the doctor returned home, and settled in London. His friend Mr. Ray was astonished at the results of his science and industry. "When I first saw," says Mr. Ray, "the author's stock of dried plants collected in Jamaica and some of the Caribbee Islands, I was surprised at the great variety of capillary plants, not thinking there had been so many to be found in both the Indies."

So great was the admiration of these extraordinary novelties, that many of them were purloined by the curious visitors, to the no small vexation of their learned proprietor. "When I returned," says Dr. Sloane, "from Jamaica, I brought with me a collection of dried specimens of some very strange plants, which excited the curiosity of the people who loved things of that nature to see them, and who were welcome, till I observed some *so very curious as to desire to carry part of them privately home with them, and injure what they left*. This made me upon my guard with them."

He was chosen secretary to the Royal Society in 1693, when he revived the publication of its Transactions, which had been for some years suspended, and continued to edit them till 1712. In 1696 he published his *Catalogus Plantarum Insulæ Jamaicae, etc.*, which he dedicated to the Royal Society and the College of Physicians. *Laudari à laudato viro* is always an honour to be coveted; and, on this occasion, it was justly awarded to him by his friend Mr. Ray, who in the *Philosophical Transactions*, has ably dilated upon the value and importance of this masterly work. About this time, Dr. Sloane established a Dispensary, the first known, for supplying the poor with medicines at prime cost. His eager pursuit of natural history, amidst all his other employments, never ceased to enrich his collection with every thing curious and valuable that this or any other country could produce; and in 1701 his Museum was considerably increased by the purchase of Mr. Courten's large collection, on condition that he should pay certain legacies and debts with which it was charged. This duty he strictly performed, although the amount to be paid rendered the purchase a dear one. In 1694, Dr. Sloane was chosen physician to Christ's Hospital, which appointment he held for thirty-six years, and exhibited a rare example of munificence by devoting the whole of the money he received to the benefit of such objects in this establishment as most needed his assistance. Two years afterwards he married Elizabeth, daughter of Alderman Langley, of London, who died in 1724, after she had brought him one son (who died at an early age) and three daughters, the youngest of whom died, also, in her infancy. Sarah, the eldest, married George Stanley, Esq., of Poultons, in the county of Hants; and Elizabeth, the second, married the Right Hon. the Lord Cadogan, colonel of the second regiment of horse guards, and governor of Tilbury Fort and Gravesend.*

* By the act of incorporation of the British Museum (26th of Geo. II.), Lord Cadogan and Hans Stanley, Esq., were appointed family trustees, and the present Earl Cadogan and Lord Stanley are now the representatives of this trust.

In 1704, Dr. Sloane sustained a great affliction in the loss of his intimate friend and the companion of his pursuits in natural history, Mr. Ray. He had now enjoyed his society for more than twenty years, and had corresponded with him during this long period. Several of the letters are printed in the *Collection of Correspondence between Mr. Ray and his Friends*; and others are preserved among the Sloane MSS. in the British Museum.* The following is the last letter ever written by Mr. Ray, about ten days before his death, and presents an affecting, but consolatory, picture of the state of mind of this great and good man, at that awful period.

"Dear Sir,—The best of friends: these are to take a final leave of you in this world. I look upon myself as a dying man. God requite your kindness, expressed any ways towards me, an hundred fold; bless you with a confluence of all good things in this world, and eternal life and happiness hereafter: grant us an happy meeting in heaven.

I am, Sir, eternally your's,

JOHN RAY.

Black Notley, Jan. 7,
1704-5.

"*Postscript.*—When you happen to write to my sincere friend, Dr. Hatton, I pray tell him I received his most obliging and affectionate letter, for which I return thanks; and acquaint him that I was not able to answer it, or —"

Here his strength failed him—he could write no more. Dr. Sloane, soon after the death of his friend, was fortunate enough to become acquainted with the celebrated Dr. Sydenham, who was so

* A list of such of the MSS. as relate to Sir Hans Sloane, will, we think, be acceptable to our readers:—

No.

1968 Miscellaneous Letters and Papers.

2824 Catalogue of a Collection of Medals made in Spain, bought by him.

3328-9 Miscellaneous Papers.

3400 A Poem, presented to Sir H. S. by W. Howard.

3516 Other Poems to him.

3692 Epigram to, by M. Mattaire.

3962 His Letters to Mr. Charleton.

3984, 4034 Medical Papers; on the Plague and on College of Physicians; and Letters to him.

3998 Medical Papers.

4020, 4025 Papers on Natural History.

4032 A Pocket-book, containing Medical Cases, in 1682.

4036 to 4070 Letters to Sir Hans Sloane.

4075-8 Medical Papers.

4288 His Letters to R. des Maizeaux.

4298 Transcripts, by Dr. Birch.

4318 Letters to Dr. Birch.

much attached to the subject of this memoir, that he took him into his house, and strongly recommended him to his patients.

In 1707, Sir Hans Sloane published, in folio, the first volume of his "*Voyage to the Islands of Madeira, Barbadoes, Nieves, St. Christopher's, and Jamaica, with the Natural History of the herbs and trees, four-footed beasts, fishes, birds, insects, reptiles, &c., illustrated with the figures of the things described, which had not heretofore been engraved, in large copper-plates as big as the life.*" This was his first contribution to the general stock of knowledge, and when questioned on the subject of his voyage, he was used to say, that, independently of the gratification of a laudable curiosity, he deemed it a sort of duty in a medical man to visit distant countries; for that the ancient and best physicians were wont to travel to the places whence their drugs were brought, to inform themselves concerning them. Speaking of the part of the globe which he had visited, he never ceased to deplore the irreparable loss of fame which this country had suffered in not being the first to partake in the glory of its discovery. "When Bartholomew Columbus" said Sir Hans, "was sent to England by his brother Christopher, in 1488, to persuade Henry VIII. to fit him out for this expedition, a sea-chart, of the parts of the world then known, was produced, and a proposal made to the king; but, after much delay and many untoward circumstances, both the map and the proposal were disregarded, and the money that had been first set apart for the purpose, and thought sufficient for the discovery of the new world, was ultimately expended in the purchase of a suite of fine tapestry hangings, brought from Antwerp, and afterwards used for the decoration of Hampton Court."

Notwithstanding the war between England and France at this period, the Doctor was elected a foreign member of the Royal Academy at Paris. His fame, indeed, as a physician, now rapidly increased. He was consulted by the nobility and by royalty itself. Queen Anne often sought his advice, and was attended by him in her last illness. When George I. came to the throne, in 1716, the Doctor was created a Baronet, an honour which had never before been conferred on any English physician; the king also made him physician-general to the army, which he enjoyed till 1727, when he was appointed physician in ordinary to George II., and continued to prescribe for the royal family till his death. He was a particular favourite with Queen Caroline, who placed the greatest confidence in his prescriptions. Sir Hans Sloane was elected president of the College of Physicians in 1719, an office which he held for sixteen

years; and was not only zealous in the discharge of the duties confided to him, but made the society a present of a hundred pounds, and remitted a very considerable sum owing to him by the corporation. Sir Hans was no less liberal to other learned bodies; he had no sooner *purchased the manor of Chelsea* than, in 1721, he gave the Apothecaries' Company the freehold of their Botanical Garden, upon the following conditions, viz., the payment of five pounds per annum, and the yearly offering of fifty plants to the Royal Society, till the number amounted to two thousand. If it were attempted to convert it to any other use, it was to devolve to the Royal Society, and ultimately to the College of Physicians; but the intentions of the original donor have been faithfully and liberally fulfilled by the Apothecaries, who expend a large sum annually, with no other view than the promotion of botanical knowledge, more especially in the cultivation of curious and rare plants. Lectures are also given twice a week during the season, which are attended by more than two hundred students. Sir Hans Sloane continued a steady friend to this establishment, continually enriching it with scarce and curious plants. He likewise contributed largely towards the buildings and improvements of the garden; and it was principally owing to his generosity and exertions that they were so soon completed for public inspection. As a tribute of gratitude, the Company of Apothecaries employed the celebrated Rysbrach on a marble statue of their benefactor, which is placed near the middle of the garden. On the north side of the pedestal is a Latin inscription, recording Sir Hans Sloane's eminence as a physician, and his encouragement of botany; and on the south side, the following:—

They,
Being sensible how necessary
That branch of science is
To the faithful discharging the duty
Of their profession,
With grateful hearts,
And general consent,
Ordered this Statue to be erected,
In the year of our Lord 1733,
That their successors and posterity
May never forget
Their common benefactor.*

* Faulkner's *Chelsea*, p. 21. There is a full-length portrait of Sir Hans in the College of Physicians and in the *Gold-headed Cane*, to which we are indebted for some anecdotes; there is also an engraving of the statue in the *Botanic Garden*, and a view of the latter.

In 1727, Sir Hans Sloane succeeded Sir Isaac Newton in the presidency of the Royal Society, and was the first medical president of that learned body. Soon afterwards he presented to the Society one hundred guineas, and a bust of King Charles II., its founder, besides being mainly instrumental in procuring the endowment for Sir Godfrey Copley's annual gold medal. In this year, Sir Hans published the second volume of his *Natural History of Jamaica, &c.*, just twenty years after the appearance of the first; and in the Preface to the former, he accounts for this long delay by enumerating the various articles which then formed his museum, and states that he had numbered and catalogued the whole of them himself, amounting to the immense quantity of nearly 40,000 articles, including 20,000 coins and medals, 2666 volumes of MSS., and 7,671 Greek and Latin medical authors,* without reckoning a great variety of other books;† and all this was effected, it should be remembered, not in learned leisure, but at intervals snatched from the exercise of his profession, and from the hours usually devoted to sleep. During the greater part of the time employed in arranging and cataloguing his vast collections, Sir Hans was in constant attendance on the royal family, and his practice was, probably, as extensive as that of Sir Henry Hallford or Sir Benjamin Brodie in the present day.

From this period till 1740 he devoted a great part of his time to the fulfilment of the duties of the high offices which he held, to the enlargement of his museum, and to the "diffusion of useful knowledge:" not that sort of knowledge so *ycleped* in modern times—but to the *promulgation* of every discovery in the healing art which his wisdom and long experience considered beneficial in all those "ills which flesh is heir to." Many marine productions, also, hitherto neglected and despised as useless, were, through his exertions, rendered articles of commerce to those who "went down to the sea in ships, and beheld the wonders of the great deep." To these various occupations must be added that occasioned by the voluminous correspondence which he carried on, for a long series of years, with the learned and scientific in every part of the known world, and which are to be found among his other MSS. in the British Museum. These numerous friends and correspondents continually sup-

* Van der Linden's book, *De Scriptoris Medicis*, published in 1687, considered the best medical bibliography of the day, enumerates only 3937; to these Sir Hans added 3734; a sufficient instance of his zeal and industry in promoting the objects of his profession.

† Sloane's *Jamaica*, vol. ii.—Introduction, pp. ii, iii.

plied him with all sorts of rare and curious objects; being fully persuaded that they would be not only acceptable, but that the receipt of them would be immediately acknowledged with gratitude.

At the age of fourscore, Sir Hans Sloane resigned the presidency of the Royal Society, when he was publicly thanked for the eminent services he had rendered to the society, and a request was made that his name might remain enrolled among the members as long as he should live. But the most extraordinary part of the life of this eminent man is the removal, at the age of eighty-one, of his museum and library from Great Russel-street, Bloomsbury, (a place to which it was so soon destined to return), to his new habitation, the "Manor House," at Chelsea. The few gifted persons who arrive at this octogenarian distinction, we believe, think only of removing to the *domus ultima*; not so Sir Hans Sloane: with an energy not belonging to his years, he set about transporting this immense collection of books, MSS., and curiosities, to Chelsea. On the 12th of May, 1741, he commenced his residence there, and retired to to enjoy, in tranquillity, the remainder of a well-spent life. He did not, however, hermit-like, seek that solitude which excludes the blandishments of society—the only charm that, at this period of life, binds us to existence. Here, as he had done in London, he received the visits of persons of distinction, of learned foreigners, and even of the royal family, who sometimes did him that honour. An interesting account of one of these royal visits, in the year 1748, is given by a contemporary writer, and, as it affords the only record of the state of Sir Hans's museum at that time, we shall make no apology for presenting some portion of it to our readers. "Dr. Mortimer, secretary to the Royal Society, conducted the Prince and Princess of Wales into the room where Sir Hans was sitting, being ancient and infirm. The Prince took a chair, and sat down by the good old gentleman sometime, when he expressed the greatest esteem and value for him personally, and how much the learned world was obliged to him for having collected such a vast library of curious books, and such immense treasures of the valuable and instructive productions of nature and art. Sir Hans's house* forms a square of above one hundred feet each side, inclosing a court; and three front rooms had tables set along the middle, which were spread over with drawers filled with all sorts of precious stones in their

* This house was built by King Henry VIII., and a print of it forms the frontispiece to Mr. Faulkner's *History of Chelsea*. It was pulled down soon after Sir Hans's death, and a row of new houses was standing upon the ancient site in the year 1763.—*Biographia Britannica*, art. Sloane.

natural beds, or state as they are found in the earth. Here the most magnificent vessels of cornelian, onyx, sardonyx, and jasper, delighted the eye. When their royal highnesses had viewed one room, and went into another, the scene was shifted; for when they returned the same tables were covered, for a second course, with all sorts of jewels, polished and set after the modern fashion, or with engraved gems; for the third course, the tables were spread with gold and silver ores, with the most precious and remarkable ornaments used in the habits of man, from Siberia to the Cape of Good Hope, from Japan to Peru;† and with both ancient and modern coins, and medals in gold and silver, the lasting monuments of historical facts: as those of a Pope Gregory XIII., recording, on a silver medal, his blind zeal for religion, in perpetuating thereon the massacre of the protestants in France; as did Charles IX., the then reigning king in that country. Here may be seen the coins of a king of England crowned at Paris; a medal, representing France and Spain striving which should first pay their obeisance to Britannia; the happy deliverance of Britain by the arrival of King William; the glorious exploits of a Duke of Marlborough, and the happy arrival of the present illustrious royal family amongst us.

“The gallery, one hundred and ten feet in length, presented a most surprising prospect; the most beautiful corals, crystals, and figured stones, and feathers of birds vying with gems; here the remains of the antediluvian world excited the awful idea of that great catastrophe, so many evident testimonies of the truth of Moses's history. Then a noble vista presented itself filled with books; among these many hundred volumes of dried plants; a room full of choice and valuable MSS.; the noble present sent by the French king to Sir Hans of his collection of paintings, medals, statues, palaces, &c., in twenty-five large atlas volumes, besides other things too many to mention here. Below stairs, some rooms are filled with the curious and venerable antiquities of Egypt, Greece, Etruria, Rome, Britain, and even America; others with large animals preserved in the skin, the great saloon lined, on every side, with bottles filled with spirits, containing various animals. The halls are adorned with the horns of divers creatures, and with weapons of different countries; among

† This collection formed what is now called an *Ethnographical Museum*, comprising materials for the study of the customs and modes of life of the various branches of the human race; such as is to be found at St. Petersburg, in Holland, and various other places, and such as we think might form a separate department, with a curator, in our own National Museum.

which it appears that the Mayalese, and not our most Christian neighbours the French, had the honour of inventing that butcherly weapon, the bayonet. Fifty volumes in folio would scarce suffice to contain a detail of this immense museum, consisting of above *two hundred thousand* articles. The prince expressed the great pleasure it gave him to see so magnificent a collection in England, esteeming it an ornament to the nation; and expressed his sentiments how much it must conduce to the benefit of learning, and how great an honour will redound to Britain, to have it established for public use to the latest posterity.”*

Although Sir Hans Sloane had now for some time declined practice as a physician, he never refused to give advice to any one, however high his rank, or humble his station in society. During his retirement, also, he continued to *promulgate* such medical discoveries as he deemed important; and did not, like many of his brethren, make a mystery of his profession. His encouragement of learned men, whether native or foreign, commands our admiration. Among the latter may be named Job Ben Solomon, son of the Mohammedan King of Banda, who, after having been sold as a slave, and suffered many reverses of fortune, found his way to England, where his talents, dignified air, and amenity of character procured him friends, and among the rest Sir Hans Sloane, who employed him for a considerable time in translating several Arabic MSS. His memory was so retentive that, it is said, he could repeat the whole of the *Koran* by heart. Sir Hans Sloane's patronage of artists is equally worthy of remark. He employed the celebrated natural history painter, George Edwards, for a great number of years, in drawing miniature figures of animals after nature, to increase his fine collection of drawings, on the same subject, by other masters. He also paid five guineas a leaf to M. Robert, a celebrated French artist, for drawings of plants, animals, shells, &c., which are considered to be among the richest and most accurate of any period. To those must be added two volumes on vellum, from the pencil of Madame Merian.

During Sir Hans Sloane's retirement at Chelsea, George Edwards was accustomed to visit him every week, to divert him for an hour or two with the common news of the town, and with any particulars that might have happened amongst his acquaintance of the Royal Society, or other scientific persons, and seldom missed drinking coffee with him on a Saturday. The old baronet was so

* *Gentleman's Magazine*, 1748, vol. xviii., p. 301, 2.

infirm as to be wholly confined to his house, except sometimes, though rarely, taking a little air in his garden, in a wheeled chair ; and this confinement made him very desirous to see any of his old acquaintance to amuse him. Knowing that the librarian did not abound in the gifts of fortune, Sir Hans was strictly careful that Edwards should be at no expense in his journeys from London to Chelsea ; and the good old man would calculate what the cost of coach-hire, waterage, or any other little charges attending on his journeys backwards and forwards would amount to, and, observing as much delicacy as possible, would oblige him annually to accept of it. George Edwards, who died at the age of eighty, was elected librarian of the College of Physicians in the year 1733, through the influence of Sir Hans Sloane, who continued, through life, his great patron. Edwards was an extraordinary man : when young, he had been intended for trade ; but having an opportunity to travel, he much improved himself, and when, on his return from abroad, he was lucky enough to obtain the leisure which his office afforded him, he devoted himself to the study of natural history, and became by great assiduity, a distinguished ornithologist. During thirty-six years, he was librarian to the College, and in that period was chosen Fellow of the Royal and Antiquarian Societies, and by the first of these learned bodies was rewarded with the Copley medal, of which he was so deservedly proud as to have it engraved in the title-page of the first volume of his work.

Hactenus hæc. Hitherto the extreme temperance of Sir Hans Sloane had preserved him from experiencing much inconvenience from the infirmities of old age ; but in his *ninetieth* year, it is recorded of him, that he *began to complain of pains*, and to be sensible of a general decay. He was often heard to say, "that the approach of death brought no terrors with it ; that he had long expected the stroke, and was prepared to receive it whenever the Great Author of his being should think fit." The long-expected moment at length arrived. With this highly-talented man and sincere christian, there were none of those "dire tossings" and "deep groans" he must have so often witnessed in the hospitals over which he presided, where

" *Despair*

Tended the sick, busiest from couch to couch ;
And over them, triumphant *Death* his dart
Shook, but delayed to strike."

None of these horrors were present at the death-bed of our benevo-

lent physician: after a short illness of three days he tranquilly breathed his last, on January 11th, 1752. He was interred on the 18th, at Chelsea, in the same vault with his lady, the solemnity being attended by the greatest concourse of persons of all ranks and conditions that had been witnessed on any similar occasion. Several members of the Royal Society were present, and the pall was borne by six of that learned body. The funeral sermon was preached by Dr. Zachary Pearce, Bishop of Bangor, who delivered a very affecting discourse from Psalm xc., 12,—“So teach us to number our days, that we may apply our hearts unto wisdom”—but no mention was made of the exalted qualities of the deceased, in consequence of an express prohibition which he had pronounced a few hours before his death, considering it “a profanation to debase, with the praise of human excellence, the pulpit, which should be devoted to display to man the greatness of the Supreme Being and to instruct him in his laws.”

In the south-east corner of the church yard of the old church at Chelsea, is a magnificent monument erected to the memory of Sir Hans Sloane and his lady, executed by Wilton, the statuary; it is composed of Portland stone, on the top of which, under a portico, supported by four pillars, is placed a beautiful vase, of the finest white marble, with four serpents entwined round it, inimitably executed, all out of one piece; on each side is an entablature, the arms* on one, and the crest on the other, with an inscription in memory of his lady, and the following, dedicated to Sir Hans Sloane.

In the memory of
Sir Hans Sloane, Bart.,
President of the Royal Society
And of the College of Physicians;
Who, in the year of our Lord 1753,
The 92nd year of his age,
Without the least pain of body,
And with a conscious serenity of mind,
Ended a virtuous and beneficial life,
This monument was erected,
By his two daughters,
Eliz. Cadogan and Sarah Stanley.†

* Gules, a sword in pale, point downwards, blade and hilt or, between two boars' heads couped at the neck; on a chief ermine, a lion passant, of the first between two masles, sable. Crest, a lion's head erased, collared with masles, interlaced sable.

† Faulkner's *Chelsea*, pp. 67, 68.

Sir Hans Sloane was easy and engaging in his manners; his conversation cheerful and obliging. Nothing could exceed his courtesy to foreigners; he was always ready, at the shortest notice, to exhibit and explain to them such objects in his museum as they wished to examine. Once a week he kept open house for persons of all ranks, particularly for his brethren of the Royal Society. His death was a severe loss to the poor, to whom he was, in every sense of the word, a liberal benefactor. He was a governor of every hospital in and near London; to each he gave £100. in his life-time, and considerable sums at his death. Whatever proposal had for its object the "public good," commanded his most zealous exertions. He promoted, as much as possible, the establishment of a colony in Georgia, in 1732: seven years afterwards, he was instrumental in establishing the Foundling Hospital, and formed the plan for bringing up the children, which proved the best that could be devised. Sir Hans Sloane was the first who introduced into England the general use of bark, which he applied, successfully, to the cure of many diseases: he also gave a sanction to the practice of inoculation. But the share he had in the foundation of the British Museum will most effectually preserve his name from oblivion. Having, with great labour and expense, during the course of a long life, collected a rich cabinet of medals, objects of natural history, &c., and a valuable library of printed books and MSS., he bequeathed the whole to the public, on condition that the sum of £20,000. should be paid to his executors for the benefit of his family; but which, according to his own declaration in a codicil to his will, made a short time before he died, was not a *fourth* part of the then intrinsic value of his museum. In the year 1753, an act of parliament was passed, for the purchase of this and other collections, and the museum was opened to the public on the 15th of January, 1759.

The persons appointed to conduct the affairs of this national institution, were styled official, family, and elected trustees. The latter, fifteen in number, chosen by the two former classes of trustees, (composed of the great officers of state and other distinguished individuals), were *then* selected for their eminence in literature, science, and art. But this laudable custom, with some exceptions, gradually fell into desuetude, and rank and wealth appear to have taken the place of literature and science. To remedy the evils supposed to have resulted from this practice, with a view to extend the public utility of the museum and to adapt it to the present advanced state of science and learning, an inquiry was instituted by Parliament, during the last session; and the committee have but

very recently concluded their valuable labours. A most important volume of evidence has been already printed ; and another, equal, if not superior, in interest, may be expected in the course of three or four months. In the mean time, we have much gratification in laying before our readers the following valuable Parliamentary Paper, presented to the House on the 2nd of August, by Sir Robert Peel :

“ At a Committee of the Trustees of the British Museum, July 20th, 1836, the resolutions passed by the select committee of the House of Commons, appointed to inquire into the affairs of the Museum, as printed in the Votes of the 14th instant, were read to the following effect :—

“ 1. That the great accessions which have been made of late to the collections of the British Museum, and the increasing interest taken in them by the public, render it expedient to revise the Establishment of the Institution, with a view to place it upon a scale more commensurate with, and better adapted to, the present state and future prospects of the Museum.

“ 2. That this committee do not recommend any interference with the family trustees, who hold their offices under Acts of Parliament, being of the nature of national compacts.

3. That though the number of official trustees may appear unnecessarily large, and though practically most of them rarely, if ever, attend, yet no inconvenience has been alleged to have risen from the number; and the committee are aware that there may be some advantage in retaining in the hands of Government, a certain influence over the affairs of the Museum, which may be exercised on special occasions; yet if any Act of the Legislature should ultimately be found necessary, a reduction in the number of this class of trustees might not be inadvisable.

4. That with regard to the existing elected trustees, the committee think it very desirable that the trustees should take steps to ascertain whether some of those whose attendance has been the most infrequent, might not be willing to resign their trusteeships; that, in future, it be understood, that any trustee hereafter to be elected, not giving personal attendance at the Museum, for a period to be fixed, is expected to resign his trusteeship; being, however, re-eligible upon any future vacancy.

5. That in filling up vacancies, it would be desirable that the electing trustees should not in future lose sight of the fact, that an opportunity is thus afforded them of occasionally conferring a mark of distinction upon men of eminence in literature, science, and art.

6. That the extension of the collections which has taken place, and the still greater extension which may be looked for, render a further division of departments necessary; and that at the head of each department there be placed a keeper, who shall be responsible for the arrangement, proper condition, and safe custody of the collection committed to his care.

7. That it is desirable that the heads of each department shall meet once in three months, for the purpose of consulting with reference to any matters of detail relating to the internal arrangements of the Museum, which they may desire jointly to submit to the trustees in writing.

8. That whenever there may be a vacancy in the office of principal librarian, or in that of secretary, it is desirable that the distribution of the duties now discharged by those officers respectively, including the expensitorship, be reconsidered, and that the office of secretary be not combined with the keepership of any department.

"9. That it is desirable that the hours during which the Museum shall be open on public days, be hereafter from ten o'clock until seven throughout the months of May, June, July, and August; and that the reading-room be opened throughout the year at nine o'clock in the morning.

"10. That it is desirable that the Museum be hereafter opened during the Easter, Whitsun, and Christmas weeks, except Sundays and Christmas-day.

"11. That it is expedient that the trustees should revise the salaries of the establishment, with the view of ascertaining what increase may be required for carrying into effect the foregoing resolutions, as well as of obtaining the whole time and services of the ablest men, independently of any remuneration from other sources; and that, when such scale of salary shall have been fixed, it shall not be competent to any officer of the Museum paid thereunder to hold any other situation conferring emolument or entailing duties.

"12. That it is desirable that the heads of departments do consult together as to the best method of preparing, on a combined system, an improved edition of the Synopsis of the Museum; that each officer be responsible for that part which is under his immediate control, and attach his signature to such part; and that the work be prepared in such a manner as to enable each part to be sold separately, which should be done at the lowest price which will cover the expenses of the publication.

"13. That it is expedient that every exertion should be made to complete, within the shortest time consistent with the due execution of the work, full and accurate catalogues of all the collections in the Museum, with a view to print and publish such portions of them as would hold out expectations of even a partial sale.

"14. That it be recommended to the trustees that every new accession to the Museum be forthwith registered in detail, by the officer at the head of the department, in a book to be kept for that purpose; and that each head of a department do make an annual report to the trustees of the accessions within the year, vouched by the signature of the principal librarian, of desiderata, and of the state and condition of his own department.

"15. That it be recommended to the trustees to take into consideration the best means of giving to the public a facility of obtaining casts from the statues, bronzes, and coins, under competent superintendence, and at as low a price as possible.

"16. That the committee are well aware that many of the alterations which they have suggested cannot be carried into effect except by increased liberality on the part of Parliament, both with respect to the establishment of the Museum, and also, to a much greater extent, for the augmentation of the collections in the different departments; but they confidently rely on the readiness of the representatives of the people to make full and ample provision for the improvement of an establishment which already enjoys a high reputation in the world of science, and is an object of daily increasing interest to the people of this country.

"17. That the committee, in the alterations which they have suggested, do not mean to convey a charge against the trustees, or against the officers of the museum, whose talents, good conduct, and general and scientific acquirements are universally admitted; and they are aware, that where imperfections exist in the collections, those imperfections are mainly attributable to the very inadequate space hitherto available for their exhibition, and to the limited pecuniary means at the disposal of the trustees; and they are of opinion that the present state of the British Museum, compared with the increasing interest taken in it by all classes of the people, justifies them in the recommendations contained in the above resolutions.

"18. That the committee having taken into consideration the Petition presented to The House by Mr. Charles Tilt, and referred to the Committee, which Petition prayed for public assistance in the preparation of a work from the medals in the British Museum, and having taken evidence on the said subject, consider that in no way can they more satisfactorily discharge the duty confided to them by the reference in question, than by simply laying before the House the minutes of evidence so taken, and ordering the Petition of Mr. Charles Tilt to be placed as an appendix to that evidence, and to these resolutions."

The trustees proceeded to consider these resolutions, and having adverted to each of them in order, resolved as follows:—

"1. With respect to such matters in the first five resolutions as appear to call for the intervention of the trustees, this committee recommends the several points to the serious consideration of the general board of trustees, whenever the occasions arrive for giving practical effect to these resolutions.

2. With respect to the 6th resolution, this committee advises the immediate appointment of a sub-committee of trustees to make a personal survey of the Museum, and in conjunction with the heads of the existing departments and with such other gentlemen employed in the Museum as it may be thought expedient to consult, to take into consideration and report to the general board the best mode of giving effect to the said resolution.

"3. With respect to the 7th, 8th, 10th, 11th, 13th, and 14th resolutions, the subjects matter of which appear to be connected together, and have reference to new internal arrangements which may be immediately necessary, this committee is of opinion that the consideration of these resolutions, and of the best practical mode of giving effect to the recommendations which they involve, should be referred to the same sub-committee to which the 6th resolution is referred.

"4. That a special memorandum be made of the recommendations contained in the 8th resolution with a view of ensuring the attention of the trustees to them on the first opportunity of vacancies.

"5. With respect to the 12th resolution, this committee understands that measures have been already taken for giving effect to the recommendation contained therein.

"6. This committee is further of opinion that a general meeting of the trustees should be convened at the earliest practicable period, for the purpose of deliberating upon the recommendations contained in the 15th resolu-

tion, and of entering into such communication with the Chancellor of the Exchequer as may appear advisable, with reference to the financial considerations connected with the report of the select committee, and particularly with the 16th resolution of that report.

"Extracted from the minutes.

"J. FORSHALL, Secretary."

Such are the various improvements recommended by the committee, and, if these suggestions are properly followed out, and acted upon by the trustees, much public good may be expected from the recent inquiry. We regret to find, however, that neither the committee, nor the trustees of the Museum allude to the necessity of a *classified* catalogue of the literary treasures contained in the British Museum, consisting of about 220,000 printed books, 24,000 volumes of the most rare and curious manuscripts, and of more than 19,000 charters, which, without such aid, may be considered as little better than sealed books to the public. The British nation ought not to be satisfied with a comparatively worthless *alphabetical* catalogue, whilst the libraries of minor institutions are accurately classed; more particularly since that public-spirited bookseller, Mr. Murray, of Albemarle-street, has offered to print and publish a *classified* catalogue at his own risk, without any expense to the government.

The annual grant, amounting to £21,974., about £4000. more than that for 1835, passed the House on the 8th of August; and we lament to add that, notwithstanding several petitions had been presented to Parliament, signed by the most distinguished scholars and scientific persons of the day, praying for *classified* catalogues of the books and MSS., no notice whatever was taken of them in the debate on the grant, it being merely stated that a more perfect catalogue (*alphabetical*) would be ready by the end of the year. And this catalogue, it is understood, will be printed to the exclusion of a *Catalogue Raisonné*, the only useful aid to the literary treasures of the British Museum.

A COMPARISON BETWEEN THE CLIMATES OF GREAT MALVERN AND LONDON,

WITH MISCELLANEOUS METEOROLOGICAL OBSERVATIONS.

WE have taken considerable pains to insure to our readers regular meteorological reports for Malvern; a locality in every way interesting, both to the admirer of rural and picturesque scenery, and to the invalid. But the details of such registers are, we know, of minor value, unless accompanied with the results for the different seasons, and for the year. In our former volumes, these have been given for the seasons of 1834 and part of 35, in two papers entitled *A Comparison between the Climates of Great Malvern and London*; and we are now enabled to furnish the following mean results for the remaining seasons of 1835 and 36. The tabular form in which they have been condensed and brought together in one view, will, we trust, render this communication valuable in a scientific point of view; while the various observations with which it abounds cannot be otherwise than interesting to all classes of our readers.

The leading facts of *Meteorological Science* are based upon certain branches of physics, which require great leisure and devotion for their investigation. Thus, *Astronomy* takes cognizance of the causes of the seasons, and of day and night, and gives data for estimating the influence of the heavenly bodies upon the ocean and the air. *Geology* teaches us that the earth is probably cooling slowly, from a state of intense heat; makes us acquainted with the nature of the several strata exposed to the influences of light, heat, and air; and affords some insight into the causes which were in operation at their formation. *Chemistry* teaches us the nature of the atmosphere, and the modifications impressed upon it by heat and vapour. *Pneumatics* and *Electricity* have each their share in establishing data for meteorological inquiries. From these and other sources the ground-work of the science is established; but the superstructure depends upon the co-operation of its cultivators, who are required to furnish materials requisite for a general comparison of facts.

With this impression, and in order to establish the mean temperature, atmospheric pressure, and dew point at Malvern, we avail ourselves of the following observations upon the seasons of 1835 and 1836, placing the results of the previous year beside them; and it will be seen, notwithstanding the various daily vicissitudes of temperature, wind, rain, &c., how little is the variation when the

means of a whole season are taken, and how nearly they all become neutralized in the general average for the year.

The first column for Malvern, in the following Table, contains the *summer and autumn of the year 1834, the winter of 1834 and 1835 (viz., December, 1834, January and February, 1835), and the spring of 1835 (viz., March, April, and May).* The second column contains the *summer and autumn of 1835, the winter of 1835 and 1836, and the spring of 1836.* These remarks will also apply to the other Tables.

TABLE I.—Mean temperature of the Seasons in Malvern and London, in 1834, 1835, and 1836.

	MALVERN.		LONDON.	
	1834-5	1835-6	1834-5	1835-6
Summer	59.8	61.0	65.2	65.0
Autumn	50.1	49.3	52.7	51.8
Winter	41.3	37.6	41.1	37.9
Spring	47.0	45.6	49.0	47.9
Mean temperature of each year	49.6	48.4	52.0	50.6
Mean of the two years	49.0		51.3	

In the above Table, the cold winter and spring of 1835—6, are indicated by the lower mean temperature of these two seasons; and had it not been for some hot sunny days in May, the mean for the spring of that year would have been still lower. The general opinion, we believe, is, that the winter in Malvern is colder than in other situations; but the result of two years' careful observation has shewn that this season is as mild in Malvern as in London.

A thermometer in the shade ought to be considered as indicating a resultant temperature, not only from the action of the sun's rays upon a variety of surfaces, all radiating heat of greater or less intensity—such as buildings, walls, the surface of the ground, &c.; but also from condensations of moisture, such as clouds, fogs, &c. The evaporation and exhalation from green and growing surfaces, and the absence of walls, buildings, pavements, &c., in the country, materially circumscribe the reflection and accumulation of heat, and tend greatly to render the maximum of the thermometer lower on a sunny day than where an arid or barren surface is exposed, as in sandy plains—or where houses are congregated, as in towns.

In summer, during clear weather, the temperature of the air in

the shade rapidly increases in the day time—passing above the mean of the season ; whereas, in winter, during clear weather, the heat of the sun hardly counteracts the influence of terrestrial radiation : hence, in the clear sunny days of winter, the temperature of the air advances but little—the mean of this period being governed by vapour ; so that it is not at all uncommon for the thermometer to rise between *sun-set* and *sun-rise* from 10° to 15° . This has been noticed in a minor degree, as early as the month of October.

The period of the maximum of the thermometer will depend upon several circumstances : during summer, if the morning is bright and fair, followed by clouds and wind in the afternoon, it will occur before noon—so it will if the sun shines in the morning and it rains in the afternoon : but if the morning is wet and the afternoon fine, the maximum is observed later. In winter, the maximum of the twenty-four hours will occur in the middle of the day or the middle of the night ; or at any other period, being governed by the movements of the great body of arial vapour and its condensations. Clouds and rain do not always *accompany* the high temperature due to warm vapour, though they are not long in following it : thus, in the Journal from which these remarks are taken, is the following :—“ December 29, 1833, 11 p. m. *Here is, to-night, a high temperature, (51°) and a high dew-point, (50°), yet it is very fine, the wind is high, and some heavy clouds are present,—but the intervals of blue sky are large, and the moon and stars brilliant ;*” but the next remark, the following morning at 9 a.m., is,—“ *heavy clouds and rain, and rain during the night.*”

Meteorological registers, in general, are not much to be relied on : the observations are recorded without any attention either to the accuracy of the instruments employed, or to the circumstances in which they are placed. In the *Philosophical Magazine*, the only periodical exclusively devoted to science now published in London, are the details of a register kept at the gardens of the Horticultural Society ; and we should have expected that here some confidence might have been placed, had we not remarked the very great difference between these details and those of the Journal of the Royal Society, at Somerset House. Sir G. S. Mackenzie has noticed this :—“ I conceive,” he says, “ no dependence can be placed on the thermometric observations made in the garden of the Horticultural Society. It is some time since I pointed out to Professor Lindley the defects of the apparatus. Instead of the thermometer being placed in the shade of a wall, it is exposed near the ground under a wooden roof, which absorbs the direct rays of the sun and radiates heat to the instrument. Thus the indications of

the maxima are too high."* The minima are lower than at Malvern; consequently the situation of the gardens must be favourable to terrestrial radiation. The mean minimum, also, is considerably lower than the mean minimum at Malvern.

In showery weather, when the clouds spread themselves out in thin broad white sheets, a decline of temperature almost always ensues. This spreading out of clouds is frequently seen during, or just after, thunder-storms; the massive-looking arched pillars of vapour, which indicate the tension of electricity, always lose their figure and spread over a larger space as the electric accumulation is expended during the storm.

TABLE II.—Mean height of the Barometer at Malvern and London, in 1834, 1835, and 1836.

	MALVERN.		LONDON.	
	1834-5	1835-6	1834-5	1835-6
Summer	29.282	29.399	29.875	29.961
Autumn	29.385	29.123	29.975	29.690
Winter	29.435	29.303	30.036	29.776
Spring	29.348	29.176	29.931	29.777
Mean of the barometer for each year	29.362	29.250	29.954	29.801
Mean of the two years	29.304		29.877	

The result of these observations of the barometer has tended to confirm the opinion that the movements of accurate barometers within a moderate distance (100 miles) of each other, are nearly simultaneous and equal, except when the mercury is *rapidly* rising and falling, then some hours occasionally intervene in the progress of the atmospheric oscillations. Still the annual mean difference between two perfect instruments within the distance mentioned, after the necessary corrections, will be a tolerably true indication of the elevation of the one above the other. By referring to the table it will be seen that the mean difference of two years between the barometer in Malvern and that of the Royal Society, in London, is .573, or something more than half an inch; which would give the elevation of the village of Great Malvern within a very few feet of the height deduced by the barometrical measurement of

* *Vide Philosophical Magazine*, vol. 7, p. 355.

the Worcestershire Beacon, published by Mr. Addison in a former volume of *The Analyst*.

If the barometer falls to a very low point, and the wind is increasing in force, it usually blows very strong as the mercury begins to ascend.

When westerly winds prevail, if the current shifts only a few points to the northward the barometer rises.

We have yet to find the invariable conditions, if any such exist, which determine the changes of the weather: they are not discoverable either in the pressure, temperature, or hygrometric state of the atmosphere.

It frequently happens with the barometer low, and the temperature of the air at the dew point, that dense, low, dark clouds roll over for a day together, without rain; whereas, with the barometer at the same point, perhaps higher, and under the same circumstances of temperature and vapour, rain falls from every passing cloud. Electrical and other changes which we cannot detect, no doubt occur in the higher regions, to bring about these various effects; hence a decline of the barometer—even with a temperature governed by vapour, i. e., with the dew point not lower than the temperature of the air—does not always portend rain.

During winter, when the barometer rises, the thermometer usually falls; but in summer they generally rise and fall together. The reason for this will be understood from what has been said before; the rising of the barometer being generally accompanied by clear weather. The clear days of summer are warmer than the cloudy ones; but in winter the cloudy and wet days are the warmest.

TABLE III.—Mean Dew Point at Malvern and London, in 1834, 1835, and 1836.

	MALVERN.		LONDON.	
	1834-5	1835-6	1834-5	1835-6
Summer	54.2	54.2	56.6	57.2
Autumn	46.5	47.2	49.3	47.2
Winter	38.2	35.6	37.7	32.3
Spring	42.1	40.9	42.0	42.0
Mean dew point for each year...	45.2	44.5	46.4	44.6
Mean of the two years	44.8		45.5	

This table is constructed from the indications of Daniell's hygrometer ; an instrument consisting of a glass tube about six or eight inches long, bent twice at right angles, and terminated, at each extremity, in a bulb. One of the bulbs, which is usually coloured, contains a very delicate little thermometer and a small quantity of ether ; the thermometer dips into the ether, which may be driven, by the heat of the hand, into either of the bulbs. Upon cooling the empty one, which may be done by pouring a few drops of ether upon it, the other immediately becomes cooled also, from the evaporation of the fluid inclosed within it, while the thermometer, dipping into it, shews how much it is cooled. When using the instrument, you narrowly watch the coloured bulb while the cooling process is going on ; and at the moment when it becomes wetted with *dew*, you note the degree at which the thermometer included in it stands, and this is the dew point. Sometimes a few drops of ether are sufficient to produce the effect, and the inclosed thermometer falls perhaps only a degree or two ; this shews that the dew point is hardly below the temperature of the air, and the atmosphere is damp. At other times it is required to wet the bulb several times ; and dew is not produced upon the coloured ball until the inclosed thermometer falls ten, fifteen, or twenty degrees below the temperature of the air ; the atmosphere, under these circumstances, being very dry.

This instrument is usually fitted to a little brass pillar, having affixed to it another small thermometer, which shews the temperature of the air ; so that the comparison between this and the dew point may be made at the same moment.

That the object and use of the hygrometer may be thoroughly understood, it should be remembered that the atmosphere consists of two essentially distinct fluids, one consisting of permanently elastic gases—constituting the *air*, properly so called—the other of aqueous vapour, which, within the range of the temperature of the atmosphere, is capable of assuming the æriform, the fluid, and the solid state. It is upon this that all the most important meteorological phenomena depend, such as dew, fog, cloud, rain, hail, or snow. It is to discover the existing quantity of this aqueous vapour when in its æriform or invisible shape, relatively to the temperature of the air, that Daniell's hygrometer is made use of.

The *dew point* frequently is as high as the temperature of the air, during heavy rain, in damp weather, in the evening, and at night. The dew point is very often much below the temperature of the air in clear fine weather, and especially with N. E. winds ;

but it can never be higher than the temperature of the air: when the latter falls (supposing them at the same point) the former must fall also—the superfluous moisture (*i. e.*, some portion of the invisible vapour) being condensed either into dew, fog, clouds, or perhaps rain. In autumn, when the temperature of the air is advancing during the day, it often happens that the dew point advances as much, and in the evening, when the air is again cooling, the dew point must fall; its subsidence being accompanied by a copious deposition of dew, and where the lower strata of the atmosphere are chilled by radiation, by the appearance of mist or fog. The form in which moisture under these circumstances is deposited upon the ground, is much modified by the state of the air: if the wind blows strongly, surfaces become moist and perhaps wet; it is only when the air is calm, that those minute drops, standing at the very tips of the blades of grass and upon every, the minutest fibre, constituting dew properly so called, can be seen.

Air of the same temperature affects our sensations differently; the impression is greatly modified by the force of the wind and the state of the dew point. When the atmosphere is calm, the temperature moderate, and the dew point very high, it seems close, warm, and oppressive—sensations much diminished by a light breeze; on the other hand, when the temperature is moderate, the air calm, and the dew point very low, the feeling is cool, bracing, and pleasant; but if the wind blows fresh, we then feel it cold, harsh, and disagreeable; this last condition is very apt to induce catarrh, sore-throat, and rheumatism in those disposed to these affections. It is when the dew point is high that ladies' hair falls out of curl, a ringlet is an elegant and delicate hygroscope. Every one must have observed, occasionally, the visible condensation of the breath; this is a tolerable indication of the state of the vapour of the atmosphere, such an appearance shewing that the temperature of the air and dew point are quite, or very nearly, the same: it may sometimes be remarked in the open air, before, almost always during, or just after, continued heavy rain.

During the winter season, (and the remark will apply generally to the autumn and spring), a rise in the thermometer and dew point at the same time, is a sure indication of clouds and rain.

It often happens on a clear sunny day after rain, when evaporation is going on with the utmost rapidity, that the dew point does not rise, or, in other words, that the quantity of vapour in the lower regions of the atmosphere does not increase, nor do clouds form in the higher; the vapour, therefore, must be drawn off to distant regions.

Sometimes when the weather is very foggy in the morning, the hygrometer exposed to it will not be dewed or moistened until the temperature of the dark bulb be reduced two, three, or four degrees. When this occurs, the fog is usually succeeded by a clear and fine day.

The following Table of the wind is arranged in accordance with the remarks made in the second volume of *The Analyst*, p. 221; and it appears that those to the south of the east and west points of the compass, in comparison with those to the north of these points, were, in the former year, as 15 to 10 at Malvern, and in the latter as 18 to 10; and they bore very nearly the same relation to each other in London—the numbers being, for the first year, 15 and a fraction to 10, in the last 19 to 10.

TABLE IV.—Of the Wind at Malvern and London for the Seasons of 1834-5 and 1835-6.

	VAPOUR.				DRY.			
	Malvern.		London.		Malvern.		London.	
	1834-5	1835-6	1834-5	1835-6	1834-5	1835-6	1834-5	1835-6
Summer.....	56	58	57	56	36	34	36	36
Autumn.....	57	61	49	60	34	30	42	31
Winter.....	59	66	62	71	31	25	28	20
Spring.....	47	51	52	54	45	41	40	36
Totals for each year ...	219	236	220	241	146	130	145	125

Two or more different currents of wind may be frequently detected by observing the clouds. Sometimes the higher ones may be seen nearly stationary, the lower moving rapidly, either at various angles to the slow-moving higher ones, or now and then in an opposite direction. The primary indication of a change in the direction of the wind may be detected sometimes by noticing the appearance of clouds, even before they are influenced in their movements by the aerial current. They display a great variety of circular segments or curls, in a plane apparently parallel to the horizon—the convex face of the curl when below the zenith being turned downwards towards the horizon, whereas the convex arch of the cumulus is turned upward towards the zenith. The appearance here spoken of may be difficult to describe, but it is very characteristic. The convexity of the curl is generally in the direction of the approaching current.

When the air is calm, evaporation is proportionate to the interval between the dew point and the temperature of the air; it is ac-

celerated by the slightest current, and enormously increased by a brisk or high wind.

In calm weather, if there is no interval between the dew point and the temperature of the air, there is no evaporation ; if the latter rises evaporation commences, but if it falls precipitation begins. If when the dew point and the temperature of the air are the same the wind blows strong, there is then some degree of evaporation, and the air appears to carry with it particles of nascent vapour, something in the same way that it blows up the dust in our roads, the particles of vapour remaining visible, and rendering the air misty or, as it is termed, thick and hazy.

TABLE V.—The number of days on which Rain or Snow fell during each Season in 1834, 1835, and 1836.

	MALVERN.		LONDON.	
	1834-5	1835-6	1834-5	1835-6
Summer	42	29	35	19
Autumn	26	50	21	45
Winter	28	38	34	33
Spring	35	44	39	46
	131	161	129	143

In taking notice of rain and rainy days with reference to season and climate, the length of time during which it is falling is quite as worthy of regard as the quantity. As much rain may fall during a heavy shower in an hour or two as in a whole day's mizzling rain ; and yet the former may be a fine, sunny, and beautiful day ; the latter, a wet and miserable one.

The temperature of rain as it descends is, doubtless, very various ; it is generally of the same temperature as the dew point. Whatever the temperature of rain may be when it descends for an hour or two, the air and constituent temperature of the vapour will be equalized.

The following remarks, taken from the meteorological journal to which we are indebted for the preceding tables and observations, may not be unacceptable to our readers.

Jan. 23rd, 1834. Notwithstanding the extreme mildness of this winter, and the great quantities of rain which have fallen during the last thirty days, it has not been by any means sickly—all accounts seem agreed in this particular—though coughs, colds, and rheumatic attacks of a minor character, were observed in the early part of the autumn of

1833. Whether the salubrity of the season is at all attributable to the very boisterous winds of November and December, we cannot venture to determine.

March, 1834. A remarkably dry month, with cold N. E. winds. Epidemic catarrh very prevalent.

The spring and early period of the summer of 1834 very dry. Rain fell on the 4th of June very seasonably for all kinds of vegetation : the rest of the month was showery.—the early part of *July* was hot, with genial showers ; towards the middle of the month, heavy continued rain and floods. *August* was generally wet, with a marked and continued decline of temperature towards the end. *September* was remarkably fine, *October* seasonable, and *November* mild and dry.

1835. On the 16th and 17th of *April*, after mild seasonable weather, the thermometer fell, at night, to 28°, or four degrees below freezing. Snow fell in London, and ice was seen in many places half an inch thick. This thermometric depression seems to have been very general, not only in this country, but in France, and other places. At Bourdeaux, the mercury fell, during the night of the 16th, to 25.5, having been for many days previously at 72° or 75°.

An account of the sudden increase and subsequent rapid decrease of temperature which occurred in the month of June, 1835, will be found in our 3rd volume, p. 175.

July and *August*, 1835, were hot and dry. Rain fell in quantity for the first time for some weeks on the 24th of the latter month : this was followed by a considerable decline of temperature. The last few days of *August* and the first week in *September* were again hot and fine. On the 8th of the latter month heavy rain fell ; the remainder of the month was wet, and the temperature rather low.

October was cold, cloudy, and, for the most part, wet, with some heavy rain towards the latter end of the month. The early part of *November* was cold, with heavy rain ; the middle mild, with showers, and fresh S. W. breezes. During the last two days of the month the rain was incessant. The first few days in December were mild. Frost set in severely on the night of the 19th, with snow, which continued, with fog and a beautiful hoar-frost, till the 28th.

January and *February*, 1836, were characterised by great alternations of temperature, with much snow and rain.

For several interesting remarks upon the spring of 1836, we must refer to our 3rd volume, p. 348.

W. A.

ON THE RARITY OF CERTAIN BIRDS IN DERBY-SHIRE,

ABUNDANT IN OTHER PARTS OF BRITAIN.

By NEVILLE WOOD, Esq.

FEW features are more remarkable in the ornithology of the flat portions of this district, than the scarcity or the non-appearance of several birds which abound in almost every other part of the kingdom. As the ornithologist cannot fail being interested in the circumstance, I propose, in this paper, to give an account of such species, and to attempt to assign some reason for so extraordinary an occurrence.

The Corn Bunting (*Emberiza miliaria*), according to every British author who has written on the subject, is common in every part of the kingdom, and as abundant in the Orkneys as elsewhere. Here, however, in the plain portion of Derbyshire, the species is rarely met with. I have seen it only in two or three instances in these parts; and every one with whom I have conversed on the subject appears perfectly ignorant of the existence of the "*Common Bunting*." Near Tutbury, on the borders of Staffordshire, three miles from the spot where I formerly resided, it is seldom met with, and the nest, when found in that neighbourhood, is considered a rarity. But about a mile beyond Tutbury, and indeed in almost every part of Staffordshire which I have explored, it is as common as I have found it to be in other districts both to the north and south of this county. During the number of years which I have passed in Derbyshire, the species under consideration has always appeared to me in the light of a rare bird, and were it not for its abundance in the adjoining counties, my knowledge of its habits would be very deficient. Its manners, or at least its general economy, are so familiar to almost every one, that they need not be detailed in this communication, especially as I have elsewhere enlarged upon them at some length.*

The south west portion of Derbyshire is extremely fertile and well cultivated, and the corn fields, which everywhere abound, present as inviting an aspect as those of any other county; and yet the Corn Bunting never makes its appearance, although it usually

* In the *British Song Birds*.

abounds in the best cultivated districts. I am, therefore, wholly unable to explain the cause of the non-appearance of the Corn Bunting in these parts; and amongst the numbers of scientific individuals to whom I have communicated the fact, I never found one who could at all elucidate the problem. Corn Bunting is by no means a faultless designation, as its congener, the Yellow Bunting, and others, are fully as partial to corn as itself; still, however, it is preferable to Common Bunting, and may, therefore, be allowed to remain for the present. I will now pass on to the next species.

The Whitethroated Fauvet (*Ficedula cinerea*, Blyth), is well known, and abounds in almost every part of the British isles, though rather a rare bird in Derbyshire. Here, indeed, it is not met with more commonly than the Garrulous Fauvet (*F. garrula*, Blyth). It haunts, for the most part, the thickest and most impenetrable brakes, apart from which it is seldom seen. The Garrulous Fauvet occurs more frequently in thick hedges, and also in osier beds; and though sometimes found in trees, usually resorts rather close to the ground. The comparative scarcity of the Whitethroated Fauvet may probably be accounted for by the paucity of underwood and braky woods in these parts, and likewise to the unremitting vigilance with which the woods are cleansed of what is probably considered as *rubbish*, though, to the ornithologist, the thick impenetrable briers underneath the trees appear in a far different light. About eight years ago, the woods and their denizens enjoyed comparative repose; at that period, probably, the Whitethroated Fauvet was as plentiful as elsewhere; but of late the woods and groves have been much too thin and open to afford requisite shelter to these pretty birds: and should the rage for wood-cutting continue with the same zeal with which it has hitherto been conducted, we shall, in turn, have to regret the departure of others of our sylvan characters.

The next genus which claims our attention on the present occasion, is *Picus*, the Woodpeckers. Of these, the Green Woodpecker, (*P. viridis*), and the Pied Woodpecker (*P. maculosus*, S. D. W.), are equally and abundantly distributed throughout Britain; but here they are rarely observed, although decayed timber is far from scarce in this neighbourhood. Sudbury Park contains an immense number of old and magnificent trees, exactly suited to the bill of the Woodpecker; and yet, in all my researches in that extensive Park, during eight or ten years, I have only thrice met with the Green Woodpecker, and but once with the Pied species. For this I can adduce no satisfactory reason, especially as many species of

similar tastes, as the Wryneck, Nuthatch, Creeper, &c., are very common in this vicinity, and more especially in the Park above alluded to. Even Bagot's Park, (about eight miles distant), apparently yet more favourable to the Woodpeckers, is seldom enlivened with its loud laugh. I have met with the Green Woodpecker in abundance in Yorkshire, Nottinghamshire, and other counties.

Having thus given some account of the very remarkable scarcity of several species common in most other localities, I shall proceed to notice a few which are abundant in Derbyshire and rare elsewhere.

The most deserving of notice, is the Siskin Goldwing, (*Carduelis spinus*), which all our Ornithologists describe as a rare and uncertain visitant, but as arriving in large flocks when it does appear. Now, both my own observations, and those communicated to me by others, tend to a totally opposite conclusion; and indeed I have no hesitation in pronouncing the species indigenous in Britain. That numbers of them do migrate there is no doubt; but a tolerably large proportion of them, I am convinced, remain and breed with us; though their shy and secluded habits during the spring and summer months prevent them, in a great measure, from being observed at that season. Indeed, so sedulously does it conceal itself in the midst of the thickest woods and forests, that though I have frequently heard it during the breeding season, yet to get a sight of it is by no means a easy matter; and this, doubtless, accounts for its having been overlooked by the naturalists of other counties. I first discovered, to a certainty, that this species breeds in the south of Derbyshire, in the summer of 1831, when a pair of these birds were caught in the month of July. I have never been able to discover the nest; probably on account of its being built on the lofty and inaccessible trees to which it is so partial. It appears to prefer the fir to any other tree, where it is met with throughout the year, but most abundantly in winter, when they arrive in considerable numbers from foreign parts.

The Marsh Reedling (*Salicaria arundinacea*) is generally supposed to be confined to the southern counties, and Selby mentions Nottinghamshire as its northern limit. But it is tolerably abundant in every part of Derbyshire and Staffordshire which I have explored, frequenting the low, flat, and swampy portions of the country. It is, however, much less abundant than its garrulous congener, the Sedge Reedling (*S. phragmitis*). The supposed scarcity of the Siskin Goldwing and Marsh Reedling is doubtless owing to the little attention paid to ornithology, by those living in the country.

SOME REMARKS ON THE PHILOSOPHY AND OBSERVANCES OF SHAKSPEARE.

As apology always implies imperfection, it is, therefore, a suspicious feature in literature ; for as "good wine needs no bush," that which is bad is not improved by the confession. An apology is a cowardly device to escape censure, and a mean excuse for imbecility ; for an unworthy subject merits no attention, and a good subject badly treated deserves no lenity.

The first question, then, to be resolved is the dignity of the subject, and herein I require no appeal ; my subject is one of the noblest character, no less than the image of nature, visible and invisible. Is the subject old ? so is nature herself ; of which Shakspeare's works are the transcript and express image. The more familiar we become with *either*, the more novel do they appear ; in this mirror is cast the exact and everlasting presence of nature in all her infinite variety, in which individuality is multiplied without confusion. A "habitation" and a form are given to feeling ; what we have felt from nature in her combinations, Shakspeare has thrown back again and attached, by description, to particular objects : his poetry is the translation of our sensations when nature is the book we read in.

As nature is coeval with time, Shakspeare will be coexistent with nature ; and while the human heart is susceptible of the same emotions and love for nature, Shakspeare will be felt as the incarnation of her spirit. But Shakspeare needs no eulogist ; his prerogative is divine, rapt in the awful originality of his genius—the predestinated priest of nature.

The writings of our "philosophic poet" are not merely poetry, they are full of the profoundest truths in philosophy and religion, realized in our daily and hourly duties in private and public life. But if I were to call Shakspeare a "man of science" it would startle the "dull ear" of those monopolists of truth. Yet what is observation ? The chemist pursues his discoveries within the walls of his laboratory ; the astronomer wakes the sleeping night with the mutter of his calculations ; the meteorologist, the botanist, the physiologist, pursue their studies from atom to atom, until, struck with a coincidence, they affirm a law. The laboratory of Shakspeare was the whole world, the earth, the "wind-obeying deep," the "brave o'erhanging firmament fretted with golden fire." He read, with an eagle-sighted eye, the universe of works, penetrated

their governable laws, seized on their coincidences, and established truths as immortal as his own spirit. The heart of man—"the centre of this world"—was laid open, as a cabinet, before him, with the secret springs of feeling and passion. He studied the powers and susceptibilities of the instrument, and thereby predicted its operations. Such was Shakspeare, "in apprehension how like a god!" His genius was an Ithuriel spear that unshrined the hidden spirit of nature and truth. Nature, in a thousand forms and attitudes, sat to him for her portrait, and in his "picture gallery," as Coleridge finely expresses it, are works which bear no resemblance but in their master perfection and truth. Without scholarship he was profoundly learned—without opportunity he detected character—without rank he elevated his imagination to the throne, and pronounced with the nobility of a king.

As though he had walked unseen through all states and degrees of life, and possessed men with his own spirit until it became infected with their dispositions. Shakspeare, as a name, is national—as a work, none perhaps so little known in comparison with its worth. That delicacy of fancy, rounding, as with a zone of light, truths the most solemn and associable—that loveliness of virtue—that passion of the affections—that consolation in trouble—that encouragement in labour—that delight of intellect; while Nature, too, in all her loveliness rises up before the mind—

"Forest, hill, and dale, and green-wood wild."

It is remarkable that Shakspeare is the only poet whose works have been illustrated by poetry: Homer, Virgil, Horace, are explained and paraphrased; Chaucer and the older poets, translated; Milton, criticised: but none other than Shakspeare have been illustrated by poetry. All the criticisms on Shakspeare are poetical. He is not only poetry himself, but he begets it in others; he communicates the faculty as the flower its perfume; at once surprises the heart and awakens the affections; and he who possesses them most understands *him* best. Compared with the chief of modern spirits, Byron, how essential is this difference,—that in Byron, every creation is identified with the poet himself; we never forget the one in the other: but in Shakspeare, no two instances of this relateness is observable; and for the god-like man himself, we never dream of him beyond the frontispiece: even his name is become an attribute which, like Nature, expresses ten thousand images, but no one distinctively.

If in this composition I should be found transgressing against the critical law of unity, I must be content to repose on the evidence of those great masters of language and composition, Johnson and Fielding. The former, in his life of Pope, remarks—"As the end of method is perspicuity, that series is sufficiently regular that avoids obscurity, and where there is no obscurity it will not be difficult to discover method." While the immortal Fielding, in the initial chapter (fifth book) of that incomparable work *Tom Jones*, overturns the bastard claims of criticism altogether. The quotations I select are too far distant from each other to be related, which must render my style discrepant. But continuity is less necessary, as Shakspeare, like nature herself, has this peculiar excellency, that while the parts are essential to the whole, yet each part, like a beautiful tree or flower, is a picture in itself.

With regard to the *character* of this composition, without referring to those illustrious commentators of the poet, Steevens, Malone, Tyrwhitt, Schlegel, Hazlitt, and, though last yet first, the sweet and sensitive Jameson,* I shall merely reply, in the words of an eminent writer and critic, "If every line of Shakspeare's plays were accompanied with a comment, every intelligent reader would be indebted to the industry of him who produced it." My object is to examine the philosophy, physical and moral, or the observances, of Shakspeare; and if the work be unsuited for, the public at least encourage the undertaking, for would we patch up an argument, give strength to reason, argument to truth, and poetry to every thing, Shakspeare is always conclusive. Thus much for the worthiness of my subject, but how far it is worthily treated is not for me to proclaim; but if the reader have "thought the same things a hundred times," I rely confidently on a verdict in my favour; for when an author's thoughts are anticipated he is sure of approbation, since he has given a premium to vanity.† Following the order of the plays, we commence with

THE TEMPEST.

Shakspeare strictly adhered to truth: his forms unknown were not as the "traveller's tales," reputed facts, however excusable the

* Of all the illustrators of our poet, Mrs. Jameson is the most fascinating, the most true. Love, with her, is an instinct; her very thoughts (noble as they are) are embued with sensibility; her reasonings are of the "woman all compact"—the Portia of her sex.

† "That was excellently observed," say I, when I read a passage in an author where his opinion agrees with mine; when we differ, there I pronounce him to be mistaken."—Swift.

deceit in so superstitious and ignorant an era. The same piercing glance penetrated what was true and what was false, and though he so often represents supernatural and strange creations, they are strictly fictitious; and while he advanced truth he repudiated error, even where ignorance was excusable. In this respect our poet differed from the philosophers, Bacon and Boyle, whose faith therein is frequently observable. In the magical play of *The Tempest*, Shakspeare availed himself of the strange superstitions of his times, and even borrowed the outline from the histories which travellers had written. The scene is laid in one of the Bermuda Isles. The following may be interesting to the reader:—In the year 1600, Sir George Sommers voyaged to the Bermudas, and was shipwrecked, the account of which was published by Silvester Jourdan, an eye-witness. The pamphlet was styled, *A Discovery of the Bermudas, or Isle of Devils, &c. &c.* Stowe, in his *Annals*, has this singular passage, relating also to the same event:—"Sir George Sommers, sitting at the stearne, seeing the ship desperate of relief, looking every minute when the ship would sinke, hee espied land, which according to *his* and Captain Newport's opinion, they judged it should be the dreadfull coast of the *Bermodes*, which islands were of all nations said and supposed to bee *enchanted and inhabited with witches and devills, &c. &c.*" The name of *The Tempest*, is even supposed to have been borrowed from this recital "of the still-veit Bermoothes."

Thus, also, in Othello's account of the "anthropophagi, and men whose heads do grow beneath their shoulders," it is given as an exaggerated tale, and arose from the monstrous fables which hung over the Indian shores, then recently discovered. We see how far these tales were credited by Shakspeare, when he turns them to ridicule.

"*Sebastian*.—Now I will believe
That there are unicorns; that in Arabia
There is one tree, the phoenix' throne; one phoenix
At this hour reigning there.

Antonio.—I'll believe both;
And what does else want credit, come to me,
And I'll be sworn 'tis true: travellers ne'er did lie,
Though fools at home condemn them."

Thus the poet takes as agency what is necessary to his play, but merely as fiction. *The Tempest* is a dream or phantasy, in which sublime truths and natural observances are interwoven with our affections and superstitions.

In the second scene Prospero and Miranda are introduced. The dignified prince and subtle scholar bows himself to the tender fears and inquiries of his daughter, listens to her fond humanity, quiets her apprehensions for "the brave vessel who had, no doubt, some noble creatures in her," and, "the time being come," prepares her for those events which are advent by the discovery of their "birth and lineage," his former life, his sufferings, his bereavements. How tenderly Prospero attaches his child to his nature by the recital of his history, the idolatry of his heart, for her whose innocent smile infused a fortitude from heaven! "Plucking his magic garments from him," figuratively, putting off formality, abstraction, all thought but of his Miranda, at once the *father*, unscholared, free, and unconstrained, to meet the simple unmasked nature of his child. He associates his relation with her early remembrances.

Prospero.—Can'st thou remember
A time before we came unto this cell?
I do not think thou can'st; for then thou wast not
Out three years old.

Miranda.—Certainly, Sir, I can.

Prospero.—By what? by any other house, or person?
Of any thing, the image tell me, that
Hath kept with thy remembrance.

Miranda.—"Tis far off:
And rather like a *dream* than an *assurance*
That my remembrance warrants," &c.

How beautiful is this filmy memory of childhood—how true to nature! "Tis far off." To youth, the recollections of childhood are indistinct; the mind is prospective, hopeful, changeful; but in old age, in second childhood, the mind retrospects, hope fades into *memory*, and then, looking "into the dark backward abysm of time," the prattle of infancy returns, early associations recur, and what in youth is a *dream*, becomes an *assurance*. This passage involves some most important physiological truths, as the physical changes of septennial periods. It is an extraordinary fact, and well known to professional men, that a blow on the head, or cerebral disturbance, may be followed not only by the imbecility of age, but by its peculiar mental changes, particularly in the recal of early associations and events, with the loss of all those intermediate. The instance of the Welsh woman in St. Thomas's Hospital, who, after such an accident, not only recalled her native tongue, which she had not spoken for twenty years, but totally forgot every word of her accustomed English, is well known in the profession.

But let us follow this "poor man" whose "library was dukedom large enough." In the words of Chaucer—

" — he would rather, at his bed-head,
A twenty books, clothed in black or red,
Of Aristotle, or his philosophy,
Than robes rich, rebeck, or saltery."

The name of Prospero might be added to the list of the calamities of genius. After recounting his twelve years banishment, he intimates the period of their release.

" *Prospero*.—Know thus far forth:
By accident most strange, bounteous Fortune,
Now, my dear lady, hath mine enemies
Brought to this shore: and by my *presciences*
I find my zenith doth depend upon
A most auspicious star; whose influence,
If now I court not, but omit, my fortunes
Will ever after droop."

This passage exactly corresponds to that of Brutus, "There is a tide in the affairs of men," and also in Troilus and Cressida, "I have important business, the *tide* whereof is now." The period in which Shakspeare lived was remarkable for the twilight which hung long dawning over the ignorant and besotted mind, when knowledge was concentrated in the individual; then study meant mystery, and science witchcraft. Chemistry had not risen out of the alchymist's crucible, and astronomy lay hidden beneath the jargon of astrology. Thus, our poet refers to the "auspicious stars," but, like a true philosopher, he does not make the stars do all the work, but rather trusts to the energy of his own character. Prospero advantaged the time, and thus the "flood of fortune" might oftener return if we were ready to take our venture. In the next scene "quaint Ariel" appears, that delicate spirit. Prospero interrogates Ariel respecting the tempest—

"Hast thou, spirit,
Perform'd to point the tempest that I bade thee?"

Ariel.—To every article.

I boarded the king's ship; now on the beak,
Now in the waist, the deck, in every cabin,
I *flamed* amazement: sometimes I'd divide,
And burn in many places; on the top-mast,
The yards, and bowsprit, would I flame distinctly,
Then meet, and join."

The phenomenon called *St. Elmo's light*, will be readily recognized in this elegant description of *Ariel's*. It is supposed to be an electrical phenomenon, which generally appears before tempestuous weather. It is mentioned by *Pliny* in his *Hist. Nat.*, as also by *Seneca* and many subsequent writers. *Douce* supposes that *Shakspeare* consulted the works of *Stephen Batman*, who, speaking of *Castor* and *Pollux*, says, "they were figured like two lamps, or cresset lights, one on the toppe of a maste, the other on the stemme or foreshippe." *Douce* adds, that "if the light first appears on the stem, or foreship, and ascends, it is good luck; but if either lights begin at the top mast, and descend toward the sea, it is a sign of tempest. By taking the latter position, *Ariel* had raised the storm according to the commands of *Prospero*."

The following extract from a modern author will be more interesting to the reader:—"St. Elmo's light is a luminous meteor that frequently settles upon the mast-head of vessels, and is, probably of electric origin, though it is never known to produce any of those disastrous effects which so often attend lightning. Sometimes it is confined to the mast-head, while at other times it gradually descends the mast to the deck itself. It was formerly supposed, by mariners, to be the visible representation of the spirit *St. Elmo*, who is the tutelar deity of those who traverse the mighty deep. When it is confined to the top-mast, it is a proof, in their opinion, that although bad weather may be present, yet it will not continue, and cannot injure the vessel: but when it descends the mast, it prognosticates a gale of wind, or a disaster, &c., &c."

The unfortunate poet, *Falconer*, alludes to this phenomenon:

"High on the mast, with pale and livid rays,
Amid the gloom portentous meteors blaze."

How beautifully *Ariel* describes the terror and furious broil of shipwreck: it is all noise and wild contention,—"*not a soul was firm*"—

"Ferdinand,
With hair up-starting, (then like reeds, not hair),
Was the first man that leaped."

Shakspeare has frequently alluded to this effect of fear; as in *Richard the Third*:—

"My hair doth stand on end to hear her curses."

Also in *Henry VI.*, &c. This is a physical fact, and produced by the erectile tissue of the scalp, of course involuntary.

We leave Ariel to plead his liberty with his stern master, whose introduction of the birth of Caliban, the "duke's jester," is admirably managed—

"*Prospero*.—Thou poisonous slave, got by the devil himself
Upon thy wicked dam, come forth !

Caliban.—As wicked dew as e'er my mother brush'd
With raven's feather from unwholesome fen,
Drop on you both !"

Though Shakspeare must have read very extensively, and probably works not confined to his own language, yet, for the most part, his observations are practical ; he saw readily, and judged correctly. Subtle in his scrutiny of natural phenomena, he ascended from effects to causes, or by a comparison of causes predicted their effects. Stagnation is the matrix of infectious breath, or miasm. The "unwholesome fen" is the abode of plague, pestilence, and death. In the catalogue of mortal ills, pestilence is the most direful ; millions are yearly sacrificed to the "vapours of decay" that float off the green and livid pools and lakes so common in India. In our own county of Lincolnshire, intermittent fevers are indigenous to the cold, damp soil and marshes that generate them. In America the same evils occur, and from the same causes.

The poet has admirably chosen the "wicked dew" for the curse of Caliban, who must be supposed ignorant of the evils which society inflicts on herself ; while the "breath of the noxious south" was slow, insidious, and fatal, working as a charm. In the 2nd scene, act 2nd, the monster appears again, and renews his curse—

"*Caliban*.—All the infections that the sun sucks up
From bogs, fens, flats, on Prosper fall, and make him,
By inch-meal, a disease."

This resembles the arrows of Apollo, in the 1st book of the *Iliad*,

"Whose direful darts inflict the raging pest,"

and exhibits the real workings, cause, and effect of the "pestilence that walketh in darkness." How shudderingly horrible, "*inch-meal, a disease !*" human revenge could not conceive nor utter such a curse ; the language is part of the monster.

In the second Act, appear Alonzo, Sebastian, Antonio, and others. This scene somewhat resembles the "Forest of Ardenne, with the deposed Duke and his gay brothers in exile ;"—they come to an encounter of their keen wits, making their "words wanton."

The anecdote of Dominie Sampson's wearing apparel strikingly coincides with the following speech of Gonzalo, and was probably suggested by it:—

"The only remark he (Dominie Sampson) was ever known to make upon the subject, was, that the air of a town like Kippletringan, seemed favourable unto wearing apparel, for he thought his coat looked almost as new as the first day he put it on."

"*Gonzalo*.—That our garments, being, as they were, drenched in the sea, hold, notwithstanding their freshness and glosses; being rather new dyed, than stained with salt-water.

Antonio.—If but one of his pockets could speak, would it not say, he lies?
Sebastian.—Ay, or very falsely pocket up his report.

Gon.—Methinks our garments are now as fresh as when we put them on in Afric."

The old courtier, again, asks—

"Is not, Sir, my doublet
As fresh as the first day I wore it."

The images of one of the most exquisite verses of Byron conform nicely to the following passage relating to the loss of Ferdinand—they are both real and powerfully true. The masculine strength displayed in Ferdinand's exertions is most exciting.*

"*Francisco*.—Sir, he may live;
I saw him beat the surges under him,
And ride upon their backs; he trod the water,
Whose enmity he flung aside, and breasted
The surge most swoln that met him: his bold head
'Bove the contentious waves he kept, and oar'd
Himself with his good arms in lusty stroke
To the shore, that o'er his wave-worn basis bow'd,
As stooping to relieve him."

Foscari, looking from his dungeon on the fresh waves of the blue Adriatic, breaks out, with all the delighted eloquence of a young unbow'd heart,

"How many a time have I
Cloven with arm still lustier, breast more daring,
The wave all roughen'd; with a swimmer's stroke
Flinging the billows back from my drench'd hair,
And laughing from my lip the audacious brine,

* Shakspeare's heroes are genuine flesh and blood, the very opposite of the sickly sentimental offspring of "a modern gentleman." The same peculiar excellence belongs to Fielding, Smollett, and Scott.

Which kiss'd it like a wine cup ; rising o'er
 The waves as they arose, and prouder still
 The loftier they uplifted me ; and oft,
 In wantonness of spirit, plunging down
 Into their green and glassy gulfs, and making
 My way to shells and sea-weed, all unseen
 By those above, till they wax'd fearful ; then
 Returning with my grasp full of such tokens
 As show'd that I had search'd the deep : exulting
 With a far-dashing stroke, and drawing deep
 The long-suspended breath, again I spurned
 The foam which broke around me, and pursued
 My track like a sea-bird. I was a boy then !"

How beautiful ! How voluptuous ! He even swims like a lover. Byron is the Shakspeare of the "world within us," not that of untaught nature, but of man in the highest state of civilization.

Among the opinions of men, none are so eccentric as those of human happiness ; and while every individual, however mean, has somewhat to hope, it is only great minds who have wandered into this many-coloured speculation, and laid down schemes for its reality. From the time of Plato to the Owenites of to-day, the golden age of universal love has been imagined and sighed for ; as though the lingering regrets of our first parents had clung to our natures as one of its elements. The Eden of earth, by an easy transition, is transfigured in the blissfulness of heaven : what was imagined possible in time, is interwoven in our religious faith as the reality of eternity. The Eutopiists can number names the most illustrious in the history of the world, "who have set forth the law of their own minds."* The French philosophers, nationally speculative, too eager for perfection to be patient of reform, would anticipate the "final doom," and foretell a new earth rising out of the universal overthrow. The Owenites of the present day, advance irrefutable arguments, and with an almost divine prescience, arrogate to themselves the millenium of the christian.

It is probable that Shakspeare had read the Republic of Plato : not that a mind so expansive could not have imagined what is so essential an element in poetry, but the following striking passage is, at least, a precedent for successive Atalantists, where Bacon and Moore might have beheld their Edens :—

"Gonzalo.—Had I the plantation of this isle, my lord,—
 Antonio.—He'd sow it with nettle-seed.

* Petrarch.

Gon.—And were the king of it, what would I do?

Seb.—'Scape being drunk, for want of wine.

Gon.—I' the commonwealth, I would by *contraries*

Execute all things: for no kind of traffic

Would I admit; no name of magistrate;

Letters should not be known; riches, poverty,

And use of service, none; contract, succession,

Bourn,* bound of land, tilth, vineyard, none;

No use of metal, corn, or wine, or oil;

No occupation; all men idle, all;

And women too, but innocent and pure;

No sovereignty."

Seb.—And yet he would be king on't.

Ant.—The latter end of his commonwealth
Forgets the beginning."

Gon.—All things in common nature should produce

Without sweat or endeavour: treason, felony,

Sword, pike, knife, gun, or need of any engine

Would I not have; but nature should bring forth,

Of its own kind, all foison, all abundance,

To feed my innocent people."

The "wilderness of sweets" with which Milton has sated the fancy in his "Eden" is not more comprehensive than this fine passage. The best comment which modern writers offer on the golden age is that of Coleridge, in his *Friend*;† a work, with all its excellence, so little known that a quotation will be sure of novelty; I hope the reader's attention may be directed to the work itself. Of the very few friends whose "adoption I have tried" Coleridge is the most constant, the wisest, the best. "Antecedent to all history, and long glimmering through it as a holy tradition, there presents itself to our imagination an indefinite period, dateless as eternity; a *state* rather than a time. For even the sense of succession is lost in the uniformity of the stream."

It was towards the close of this "golden age" when conscience acted in man with the ease and uniformity of instinct—when labour was a sweet name for the activity of sane minds in healthful bodies, and all enjoyed in common the bounteous harvest, produced and gathered in by common effort—when there existed in the sexes, and in the individuals of each sex, just variety enough to permit and call forth the gentle restlessness and final union of chaste love and individual attachment, each seeking and finding the beloved one by the natural *affinity* of their beings—when the dread Sove-

* Landmark.

† *The Friend*; a series of essays, in three volumes, to aid in the formation of fixed principles in politics, morals, and religion, &c., by S. T. Coleridge.

reign of the Universe was known only as the Universal Parent, no altar but the pure heart, and thanksgiving and grateful love the sole sacrifice.

How far we are to receive the doctrine of human perfectibility—not by conversion, but rather creation—from infancy to age,* the reader must determine by a self-examination of the arguments. Certainly all inclination implies acquirement, which also involves agency or cause, and that cause must be independent of our will, otherwise a contradiction in terms. But it may be dangerous for an individual to pursue this inquiry; the world is not yet ripe for reason.

Alonso.—I would with such perfection govern, Sir,
To excel the golden age."

Thus discoursing, they "lose and neglect the creeping hours of time." Ariel enters, and with his music "charms up their sense in sleep."

Alonso.—What, all so soon asleep! I wish mine eyes
Would, with themselves, *shut up my thoughts*: I find
They are inclined to do so.

Sebastian.—Please you, Sir,
Do not omit the heavy offer of it:
It seldom visits sorrow; when it doth
It is a comforter."

That is, the consciousness of thought. Shakspeare has minutely anatomised sleep, in all its states and relations: there is nothing within its verge but he has described. Dr. Young's apostrophe to sleep, though fine, is but an amplification of this one line—

"*It seldom visits sorrow*; when it doth
It is a comforter."

How perfectly the balm of sleep is appreciated!—it is raised into positive enjoyment.

"Sleep that knits up the ravell'd sleeve of care."

Shakspeare must often have shuddered at the agonies he depicted, and thereby grew finely sensible of "the balm of hurt minds."—His personification of sleep, in *Henry IV.*, is above all praise.

Sebastian.—What a strange drowsiness possesses them!
Antonio.—It is the quality o' the climate."

This is another of those signs of observation, and expresses more

* Owenism.

than Shakspeare could have anticipated. Common experience tells us many truths, and this among the number, that change of climate affects us in various ways, influencing both the nervous and sanguineous systems, but more especially the nervous. Fresh air is peculiarly sedative, especially to those long excluded from it. This, of course, is self-evident; but the poet here implies a *peculiar state* of the air, or "quality of the climate:" "the dull and drowsy air."^{*} That the air is susceptible of changes in its density and rarity is sufficiently plain, as are its effects upon the body. In ascending mountains the changes of climates are *sensibly* felt, and drowsiness is a common result, even when independent of change of temperature. The atmosphere cannot be varied in its elements or their proportions without injury to life, and therefore these qualities of the climate must depend upon some extrinsic and super-added agent, which is most probably electricity, the *animi mundi*, and animating cause of every atmospheric phenomenon, whether of the "swift-winged cloud," black and impetuous,[†] or the filmy gauze high up amid the stars of heaven.

Some persons are more powerfully affected by atmospherical changes than others, and more so during the summer solstice, when the atmosphere is *positively electrified*. Females, particularly, are influenced by thunder-storms, and in some instances so strongly as to induce hysteria and epilepsy. The sensibility of an amputated limb, or a once-fractured bone, during atmospheric changes, is generally known. Even a "shooting corn" is no mean barometer. Considering the identity of electricity with the "nervous fluid," these and every such like sympathy between man and the external world is explained.

Soil and vegetation are of course essential to the "quality of the climate," which in "producing sleep," as Antonio remarks, "is just philosophy, though but common observance."

The humorous Trinculo, discovering Calaban, comments most wisely on the monster:—

Trinculo.— 'What have we here? a man or a fish?
Dead or alive? A fish: he smells like a fish; a
Very ancient and fish-like smell.

* Spenser.

† The nimbus. The cirrus, so prevalent in summer, especially in the quiet repose of evening. In the advancement of science, that of meteorology, one of the most interesting, and yet neglected, may hereafter inform us how to oppose those evils which surround us; for science is useless unless it be applicable to our wants.

• • • • A strange fish !
 Were I in England now, (as once I was),
 And had but this fish painted,
 Not a holiday fool there but would
 Give a piece of silver : there would this monster
 Make a man ; any strange beast there
 Makes a man. When they will not give a doit
 To relieve a lame beggar, they will lay out ten
 To see a dead Indian."

"Qui credit
 Stultus stultum vult, ut sit sui similis."^{*}
 "Et nati natorum et qui nascentur ab illis."[†]

The monomania of Shakspeare's characters, as in *The Tempest*, *Macbeth*, *Hamlet*, *Julius Cæsar*, &c., outrivals all reasoning. Had Shakspeare been a Pinnel he could not more nicely have delineated "the mind's extacy." Though spiritual agency is represented in *The Tempest*, the visitation to Alonzo is called extacy by Gonzalo, to whom also Ariel would have been visible unless he was blinder than Balaam's ass. The guiltless good old lord, Gonzalo, was insensible to the *appearance*, and himself attributes the language of Alonzo, &c., to their "extacy ;" which word Shakspeare uses for any degree of mental alienation. But of this more "anon."

The situation of Ferdinand and Miranda living for themselves, with such a total giving up of the heart, in the solitude of that lonely isle, is inconceivably beautiful. Byron's Haidee and Juan are more sensual, but far less lovely and pleasing. Haidee quickens the pulse, but Miranda awakens the affections. A model for Eve, "so perfect and so peerless, created of every creature best."

Mrs. Jameson has exquisitely touched the character of Miranda—it is sacred. Prospero, with all his philosophy, is a most subtle discerner. He reasoned like a god, but he felt as a man and a father.

Prospero to Ferdinand.—"Look thou be true ; do
 not give dalliance
 Too much the rein ; the strongest oaths are straw
 To the fire i' the blood."

Eve fell knowing no ill ; Miranda could not have sinned, but her innocence made chastity with Ferdinand a double virtue, and *he* was a Milanese and a courtier.

* Not in Terence. Free translation, "One fool makes many."

† Juvenal.

"*Basium bullo fine terminetur.*"

The masque of Prospero is a most fascinating episode in the play ; it overflows with poetry. Milton's *Comus* is a more laborious composition, but much beneath Shakspeare in the luxuriance and poetry of the light and fantastic train.

"*Enter Iris.*"

"*Iris.*—Ceres, most bounteous lady, thy rich less
Of wheat, rye, barley, vetches, oats, and pease ;
Thy turfy mountains, where live nibbling sheep,
And flat meads thatch'd with stover, them to keep ;
Thy banks with peonied and lilted brims,
Which spungy April at thy best betrimms,
To make cold nymphs chaste crowns ; and thy broom groves,
Whose shadow the dismissed bachelor loves, &c.

Ceres.—Hail ! many-coloured messenger, that ne'er
Dost disobey the wife of Jupiter ;
Who, with thy saffron wings, upon my flowers
Diffusest honey-drops, refreshing showers :
And with each end of thy blue bow, dost crown
My bosky acres, and my unshrub'd down—
Rich scarf to my proud earth," &c.

How lovely this is painted ! we behold at once the flowers and fields with "warm rain wet,"—the chequered cloud,—"the rainbow, based on ocean, span the sky."

This play ends with a most happy consistency : unlike the "catastrophies" generally, there is no abruptness, nor awkward interpolations. Things come about inevitably, because naturally ; and the reader is content to leave the chaste Miranda to the delights which are to open before her in the new world to which she hastens ; and yet we may possibly feel some regret that the "spirit of that sweet Isle" was departing, that the "lime grove" would be forsaken, that no voice would ever more awaken the solitude of their cell.

The wand is broke—"those strange books drown'd far beyond the plummet's reach"—Prospero's Duke of Milan—Caliban has sued for motley—and "fine Ariel" is free !

Z.

REMARKS ON AN IMPORTANT BRANCH OF FEMALE EDUCATION.

ALTHOUGH the following remarks connected with this topic of universal interest may contain nothing strikingly new, yet the person who states facts, and observations drawn from experience, adds to the common stock of data from which the man of wider intellectual views and greater faculty for generalization may deduce a leading principle.

It must be felt by all who have a share in educating girls that there is extreme difficulty in holding any intercourse with them on the subject of love, restricting the meaning of that word to affection between the sexes. It may excite a smile to see this topic gravely brought forward; but truly there is little to provoke mirth, and much to cause sorrow, in the contemplation of those bitter and unavailing regrets, the undermined health, and the impaired tranquillity, which are the lot of so many women, owing principally to the defects which prevail in this branch of education.

Every one who approaches this subject feels instinctively that there is awkwardness and difficulty in treating it; and this very feeling gives a key to some of the prevailing errors that exist thereupon. Let us examine the cause from which this difficulty arises. Is it not that we have confounded right and wrong? that we have attached an idea of shame to that of which we need not be ashamed? that our zeal for delicacy has led us into a habit of mystification, which does not promote the interests of true modesty?

It must always be desirable to define the boundaries between right and wrong; the narrower the line is, the more it requires to have light thrown upon it, and it is a shallow and futile expedient to turn away from an inevitable difficulty, instead of facing it. Yet is not the former the course generally resorted to in the case of which I speak? Perhaps the best way of finding what *would be* right, is, to ascertain what *is* wrong. How then are girls trained? When their increasing perception and natural curiosity lead them to inquire concerning what they see and hear, the answer, in a multitude of instances, is "Never mind, my dear, it is no matter to you," or "You must never ask such questions, they are not proper;" or, worse, they are told some absurd falsehood, which, however, rarely deceives them. Any one who has been accustomed to hear girls read aloud will know that it is surprising at how early an age

they will detect and omit the words and phrases which refer to any of these interdicted subjects. And how has this knowledge been obtained? Not through the legitimate means of a simple communication from the mother or teacher, but by some indirect, and often polluted, channel. Or should a girl escape this temptation, and in her simplicity ask the meaning of any expression she does not understand, instead of hailing and encouraging this frankness, the parent or instructor generally gives some evasive answer, or has recourse to the infallible sedative to all curiosity, "Never mind."—*Never mind!* Can any woman be so utterly blind and forgetful as to suppose that a girl *will* "Never mind?" No; but, repulsed in her straight-forward inquiries, she will resort to other sources of information. Keep her out of the way of servants, she will converse with companions a little older than herself: separate her from these, still she will contrive some way of gratifying her curiosity. The partial information she acquires will excite further activity of mind; and thus will her thoughts restlessly dwell and remain awake upon topics which, had her first inquiries been rationally and judiciously answered, would have made comparatively little impression. Habits of concealment are generated, and a promising foundation is laid for future mischief.

Keep the girl as ignorant as you please, you cannot prevent her growing up; and love is a matter which she does and must hear discussed, and in which she is naturally interested. Still the system is pursued which seems invented to teach affectation and produce imprudent conduct. If she speak her thoughts to those who instruct her, she is generally chilled by ridicule; and finding that the natural expression of her sentiments is laughed at, she learns if she have any feeling, to conceal those sentiments from the people who sneer at them. But as the mind has naturally—particularly during youth—a restless craving for sympathy, and longing to utter what passes within it, she probably finds some one near her own age with whom to converse, and these two inexperienced girls build one another up in their crude and romantic ideas. Let it be remembered, too, that these conversations have all along the excitement of secrecy and concealment from their elders.

Now, is all this right? Is such treatment correct in its principle, or desirable in its results? I shall dwell a little on these two questions, and then suggest whether some better course be not practicable.

First. "Is it correct in its principle?" God has formed us intelligent and responsible beings; he has "created us male and fe-

male," that we may the better subserve the purposes of his providence, and that our mutual happiness may be augmented. Such being the fact, it is manifestly his intention that we should find pleasure in each other's society. No system *can* counteract this spontaneous feeling. One which *tries* to substitute an affected indifference, cannot be in accordance with the will of our Creator. "What God hath cleansed, that call not *thou* common," may, (without violating the *spirit* of the imagination), be said to those who endeavour to extirpate as wrong, or to quash as inexpedient, the natural sympathies of the heart.

Secondly. "Is it desirable in it's results?" How many a sorrowing voice and heart could reply to this question in the negative! No force of education can render a girl callous to the studied attentions of a man, or harden her against susceptibility to attachment. Nor can instruction so far supply the place of experience as to fit her for dispassionately considering what claims to her regard a man actually possesses. Further: constituted as society is, every young woman with even moderate attractions receives a certain share of attention; and the instances are rare indeed, where some one does not try to win her affection. Here, then, is a case which surely merits caution and observation; and a mother's fostering care was scarcely more needed when her daughter was a helpless baby, than it is at this period. But the way in which most mothers act, deprives the child of the advantages which Providence, by his wise arrangements, has placed within her reach. The girl, accustomed to have any expressions that relate to the affections received without apparent interest or sympathy by the parent, has learned to avoid the subject, and in nine cases out of ten the mother is the last confidante whom the daughter would choose. The natural result is, that imprudent attachments are formed, and a girl's affection and promise are often engaged, before the parents suspect anything of the kind. They then give a reluctant consent, or enforce a peremptory refusal; in either case the girl is the victim, and through years of ill-assorted married life, or of singleness resulting from disappointment, she has to bewail the capital error in her education.

The third consideration I proposed is, "Whether some better course be not practicable;" I confidently answer that it is. Here and there "a more excellent way" is followed, and with the happiest results. The daughter habituated to make the mother her most confidential friend, receives the benefit of maternal council and experience; and the mother, aware of what passes in her daughter's mind, knows how to time her cautions, and how, silently but

surely, to fence her child's path from the dangers that "most easily beset it." But to accomplish this the habit of unfettered confidence must be formed from infancy, and never checked by such rebuffs as I have alluded to. Of course, judgment and discretion are needed here, as in every other branch of education, nor can any rules be given as applicable to every instance; for this is not a case for *rules*, but for *principles*. As a principle, I would lay down the vast importance of cherishing habits of unreserved confidence from the child to the parent. No mother, however, need expect this who will not be confidential in turn; for cold does not produce frost more surely than distrust produces reserve. Very great exercise of prudence is requisite here; the judgment of each individual mother must determine the precise line of conduct suitable to her own case; and unfortunately some mothers shrink from the trouble of this, and excuse themselves by saying that "they let things take their natural course." But surely a question involving the mental purity and domestic peace of a daughter deserves to receive some attention.

Another principle may be mentioned, namely, that when a mother does converse with her daughter on any subject connected with the affections and with married life, she should carefully avoid levity and "foolish jesting, which is not convenient." Let her speak as to a rational being, on a rational subject, and she may rest assured that her girl will not be half so liable to have her head turned by the attentions of men, or to lay herself out to attract their regards, as if the common plan had been pursued. And while I urge upon the mother not to laugh *with* the daughter, I would also say "Do not laugh *at* her." It is to be expected that a young and inexperienced creature will hold many opinions not borne out by facts, and that she will entertain hopes and expectations which real life will never fulfil. She must be warned of this, and her mind must be trained to meet disappointment. But yet how pleasant and bright a flower is the unaffected romance of youth! To those who have lived to break the charm, how saddening is the thought that the being who now enters life so full of joyous anticipation will herself inherit the lot of suffering which is peculiar to woman, over and above all that she shares with man! When a girl expresses the opinions natural to her age respecting first love, unchanging constancy, and disinterested attachment, do not laugh at her, but calmly point out how little probability there is that actual life will realize her expectations, and that a great fund of comfort and enjoyment exists independently of them. There is,

however, no occasion to recur to these subjects continually ; to make any one idea unduly predominant is to destroy that well-adjusted proportion of mind which it ought to be the object of education to establish.

Whether the hints I have given be practicable or not, it is quite undeniable that the defects to which I have alluded *do* exist, and produce bitterly painful results. In conclusion, I would urge upon all who have a share in forming the minds of girls, (and who has *not* a share, directly or indirectly ?) that to them is committed a stewardship for which they will one day give account ; and if they would "do it with joy, and not with grief," they must conscientiously use every means in their power for the advantage of those over whom they have an influence. I shall rejoice if what I have said should draw to this interesting, but neglected subject the attention of any one better qualified than I am to suggest improvement.

T. M.

ON THE EFFECTS OF CERTAIN MENTAL AND BODILY STATES UPON THE IMAGINATION.

BY LANGSTON PARKER, ESQ.

IV.—ON THE IMAGINATION OF THE INSANE.

THE ideas called up by the Imagination during sleep, being so much more vivid than those of the waking state, sometimes affect the mind in a permanent manner, by persuading it that the imaginations thus elicited are realities, leading the individual to act upon the fancies of his dream, and to continue to regard its delusions as facts. These instances of insanity from dreams are extremely rare, and produced only by those of the most extraordinary character, acting upon a mind predisposed to wander, where the dream bears a strict resemblance to the prevailing train of thought, wish, or apprehension. Thus, a dream of the day of judgment has produced insanity, where superstitious dread was the prevailing disposition of the mind. Extatic dreams during the night often form the prelude to acts of maniacal devotion. It is also sometimes from enchanting

dreams, and a supposed apparition of the beloved object, that madness from love breaks out with fury, after longer or shorter intervals of reason and tranquillity. The origin of the ideas which ultimately lead the Imagination to put on the character of insanity, appears to be of the greatest importance to the elucidation of the causes of mental alienation generally, and it likewise will furnish the only certain data on which to effect its cure. This is a point interesting, I should suppose, to all, and it was solely from an intimate acquaintance with it that Rasselas and his sister were enabled to effect the cure of the insane astronomer of Cairo. This simple tale teaches us more of the nature of insanity, of its causes, and mode of remedy, than half the elaborate and learnedly mystical treatises that medico-metaphysicians have ever penned.

Of all the powers of the human mind the Imagination appears to be the most subject to injury. The fantastic illusions and ideal transformations, which are by far the most frequent forms of mental derangement, are solely ascribable to lesions of this faculty. How pathetic and how true is Ophelia's description of the unhinged mind—

“That noble and most sovereign reason,
Like sweet bells jangled, out of tune and harsh ;

Blasted with extasie.”

Perfectly just is this comparison of the mind of the insane. It still possesses all its faculties, like the octave of bells its full complement of notes ; but their concord is destroyed, their harmony lost : its workings hurt us by pain, instead of entrancing us by pleasure.

It is not often that ambition, indulged and successful, destroys the equilibrium of the mind. It is generally a vice of great souls—a set purpose, pursued with patience, difficulty, and great mental effort through a long series of obstacles, which it removes gradually and laboriously from the tortuous and rugged pathway which it travels. The mind is thus prepared for the new condition in which it ultimately hopes to be placed, accommodates itself by anticipation to the circumstances of that condition, and grows familiar with all its relations and bearings. Even strong minds, have, however, been totally deranged by the unlooked for and sudden success of great political enterprises: they travel a beaten road—all opposing force gives way before them—resistance becomes vain, and they arrive at the goal of their wishes so unexpectedly, that the mind can hardly persuade itself that such events are not rather the delusions

of a dream than the sober certainties of waking reality. Of this the history of Tommaso Anniello, better known as the fisherman of Naples, Masaniello, affords one of the most striking examples on the whole page of history.*

That species of disordered intellect termed, by authors, *mania mitis*—roving or restless melancholy—affords one of the best subjects for the illustration of the fancy of the insane. Let us take a medical description of it, and see how closely the creations of the poets resemble the natural pictures from which they are copied. "These people wake as others dream. Though they talk with you and seem to be very intent and busy, they are only thinking of a toy; and still that toy runs in the mind, whatever it be—that fear, that suspicion, that agony, that vexation, that cross, that castle in the air, that fiction, that pleasant waking dream."†

The kind and degree of this craziness will vary from the previous constitution of the mind, from its natural bias, and from the causes which produced the mental aberration. I shall notice three examples of it: one of a French watch-maker, the second of Ophelia, and the third of Madge Wildfire—the first of these a real occurrence, the second and third fictitious, but strictly analogous to the descriptions of the malady given by authors, and faithful representations of nature. The case of the watch-maker is recorded by the celebrated Pinel, physician to the Bicêtre, in Paris, during the revolution and the republic. This man was infatuated with the chimera of perpetual motion, and to effect this discovery he set to work with indefatigable ardour. From unremitting attention to the object of his enthusiasm, coinciding with the influence of revolutionary disturbances, his imagination was greatly heated, his sleep was interrupted, and at length a complete derangement took place. His case was marked by a most whimsical illusion of the Imagination: he fancied that he had lost his head upon the scaffold; that it had been thrown promiscuously among the heads of many other victims; that the judges, having repented of their cruel sentence, had ordered these heads to be restored to their respective owners, and placed upon their respective shoulders; but, that in consequence of an unhappy mistake, the gentlemen who had the management of that business had placed upon his shoulders the head of one of his unhappy companions. The idea of this whimsical change of his head occupied

* For a full account of the rise, fall, and madness of Masaniello, see Miss Holford's "*Italian Histories*."

† *The Study of Medicine*, by John Mason Good,

his thoughts night and day, which determined his friends to send him to the Asylum. Nothing could exceed the extravagant flowings of his heated brain : he sung, he cried, or danced incessantly ; and as there appeared no propensity to commit acts of violence or disturbance, he was allowed to go about the hospital without controul, in order to expend, by evaporation, the effervescence of his spirits. "Look at these teeth !" he cried, "mine were exceedingly handsome ; these are rotten and decayed. My mouth was sound and healthy ; this is foul and diseased. What difference between this hair, and that of my own head !" The idea of perpetual motion frequently recurred to him in the midst of his wanderings ; and he chalked on all the doors or windows as he passed, the various designs by which his wonderous piece of mechanism was to be constructed. The method best calculated to cure so whimsical an illusion appeared to be that of encouraging his prosecution of it to satiety. His friends were accordingly requested to send him his tools, with materials to work upon, and other requisites, such as plates of copper, steel, and watch wheels. His zeal was now redoubled ; his whole attention was riveted upon his favourite pursuit ; he forgot his meals, and after about a months labour ; which he sustained with a constancy that deserved a better success, our artist began to think that he had followed a false rout. He broke into a thousand fragments the piece of machinery which he had fabricated with so much toil, and thought, and labour, entered upon the construction of another upon a new plan, and laboured with equal pertinacity for another fortnight. The various parts being completed, he brought them together ; he fancied that he saw a perfect harmony amongst them. The whole was now finally adjusted ;—his anxiety was indescribable—motion succeeded ; it continued for some time, and he supposed it capable of continuing for ever. He was elevated to the highest pitch of enjoyment and triumph, and ran like lightning into the interior of the hospital, crying out, like another Archimedes, "At length I have solved this famous problem, which has puzzled so many men celebrated for their wisdom and talents !" Grievous to state, he was disconcerted in the midst of his triumph. The wheels stopped !—the "perpetual motion" ceased ! His intoxication of joy was succeeded by disappointment and confusion ; though, to avoid a humiliating and mortifying confession, he declared that he could easily remove the impediment ; but, tired of that kind of employment, he was determined, for the future, to devote his attention solely to his business. There still remained another imaginary impression to be counteracted, that of the ex-

change of his head, which unceasingly occurred to him. A keen and unanswerable stroke of pleasantry seemed best adapted to correct this fantastic whim. Another convalescent, of a gay and facetious humour, instructed in the part he should play in this comedy, adroitly turned the conversation to the subject of the famous miracle of St. Denis, in which it will be recollected that the holy man, after decapitation, walked away with his head under his arm, which he kissed, and condoled with it for its misfortune. Our mechanician strongly maintained the possibility of the fact, and sought to confirm it by an appeal to his own case. The other set up a loud laugh, and replied, with a tone of the keenest ridicule, "Madman as thou art, how could St. Denis kiss his own head? Was it with his heels?" This equally unexpected and unanswerable retort forcibly struck the maniac. He retired confused amid the peals of laughter which were provoked at his expense, and never afterwards mentioned the exchange of his head.* This is a very instructive case, inasmuch as it illustrates, in the clearest point of view, the moral treatment of the insane. It shews us the kind of mental remedies which are likely to be successful in the cure of disordered intellect. This disease was purely of the Imagination, and the causes which produced it did not lie very deep, neither were they such as, under proper management, were likely to produce any permanent alienation of mind. An intense application to the more speculative parts of his trade, had fixed his Imagination upon the discovery of perpetual motion; mingling with this, when his judgment was half dethroned, came the idea of losing his own head, and getting a wrong one. And at a time when heads were falling indiscriminately around him, this second freak of the Imagination, acting as a kind of interlude or bye-play to the first, was one of the most natural that could be supposed. From the same reason that this person ran mad in attempting to discover perpetual motion, does the astronomer, of whose mind religious veneration forms a part, make the sun his god, and worship him as the creator of the world. From the same cause does the enthusiast spend whole nights in prayer, and the poet speak constantly in rhyme. Of the latter form of insanity I once saw a lady who never spoke in prose; her rhyme was easy and natural, and the facility with which it was composed and uttered wonderful. The ideas which produced this man's insanity were rather of a whimsical cast; springing from a

* Ph. Pinel, *Traité Medico-Philosophique sur l'Aliénation Mentale*, &c.—Paris, 1809.

mind of no great power, over which none of the passions appear to have exercised any marked or predominant sway.

The Imagination of Ophelia was of a far more intellectual kind.* The whole soul of the gentle Ophelia appears to have been absorbed in her passion for Hamlet, which was unable to bear up against the double misfortune of his declaration of "I lov'd you not," and the counterfeit insanity, to her real, which was assumed for the furtherance of his designs. Her dejection consequent upon this shews us, at once, the bent and tenor of her affections.

"Oh ! what a noble mind is here o'erthrown !
The courtier's, soldier's, scholar's eye, tongue, sword ;
The expectancy and rose of the fair state,
The glass of fashion, and the mould of form.
• • • • • •

I am of ladies most deject and wretched,
That suck'd the honey of his music vows."

The professions of affection on the part of Hamlet had been followed by contumely and insult, and her mind could no longer retain its sanity when she witnessed the murder of her father by the very hand that was presented for her acceptance. Although the insanity on the part of Ophelia does not take place till after the murder of Polonius, and appears to have been more immediately caused by that event—still we find her wandering Imagination weaving all her misfortunes into one thread, and twining it round the predominating passion of her love for Hamlet—

"He's dead and gone, lady, he's dead and gone,
At his head a grass green turf, and at his heels a stone;"

* That form of insanity under which Ophelia laboured has been termed monomania, *i. e.*, the hallucination is confined to one idea, or a small number of ideas. This species of disordered intellect is in direct proportion as regards the frequency of its occurrence, with the development of the intellectual faculties, and the progress of civilization ; in which the play of these faculties becomes so much modified by the nature of the objects which surround them, and upon which they are exercised. No person can fancy a North American savage a monomaniac from sentimental love, or a New Zealander rendered insane from disappointed ambition, or the success of an opposite party in politics. This disorder is essentially dependent upon the passions, which themselves are the result of the moral relations which connect mankind, and by which they are bound in one grand community. It is the child of the affections, the creature of sentiment ; and he who wishes to become acquainted with its phenomena must make the heart of man his study, and gain an intimate acquaintance with those infinite varieties of human feeling which lie too deep for the eye of the vulgar and common-place observer to analyze.

alluding to her father, doubtless, since Hamlet was yet living; but in the next scene, the idea of her lover intrudes, and she is introduced strewing the tomb of old age with tokens that are cast only upon the grave of youth and beauty—

“Larded all with sweet flowers
Which bewept to the grave did go
With true-love showers.”

And again,

“White the shroud as mountain snow,”

white being the peculiar mourning-colour for the young. This feature of her diseased fancy—this wandering and mixture of ideas of opposite characters—this investment of one circumstance with attributes belonging to another, has never been more truly described—never more beautifully illustrated—than in the character of Ophelia.

In all cases of mental alienation from disappointed affection, or from any other cause in which love is the predominant feeling, prior to the hallucination, the object of this passion mixes itself with all the wanderings of the maniac, and all the vigour of a morbid imagination is taxed to invest it with every ideal beauty. He is the god of their dreams and the idol of their waking hours; the maniac chants songs of his virtues, weaves garlands for his brows, decks the board for his return—at one moment arraying herself in bridal garments for the wedding, and the next clad in weeds, and following him in fancy to the grave.

This fact, which is recognized by all conversant with the insane, did not escape the observation of Shakspeare. The thoughts of Ophelia, though distracted and wandering, constantly return to one point—that of her passion for Hamlet. After mourning the loss of her father, and gathering the appropriate emblems of sorrow to strew his bier, her ideas suddenly revert to the master-thought of her distraction, and she breaks forth into chants of affection for her lover. Thus:—

“I would give you some violets; but they withered all when my father died. They say he made a good end.

“For bonny sweet Robin is all my joy.”

The remark of Laertes might be a medical comment upon her state:

“Thought, and affliction, passion, hell itself,
She turns to favour and to prettiness.”

The character of Madge Wildfire, so admirably drawn by Sir W. Scott, is scarcely inferior to that of Ophelia in the boldness of its outline and truth of its colouring. The previous bias of the mind was different, the station in life, the refinement of education, the delicacy of sentiment, were all on the side of Ophelia; though we find, as is commonly the case with the insane, that this delicacy is in a measure removed, and Ophelia the distraught speaks boldly of that passion which Ophelia the sane would hardly have dared to unmask to the moon.

The history of Madge Wildfire, previous to her derangement, is well known to all who have read—and who has not read?—that *chef d'œuvre* of the wizard of the north, the *Heart of Mid Lothian*. Illicit love and its consequences, in a character of low extraction, whom beauty raised above her station, were the predisposing causes of her malady. Her personal charms appear to have attracted much attention, and a considerable degree of vanity and self-love formed a prominent feature in her character. This ruling passion of her mind runs through the whole of her history when insane, and stamps all its workings with a peculiar feature. Facts teach us that persons in whom vanity or *a-nour-propre* form a predominating part of the disposition, if afflicted with insanity, from whatever cause it may arise, the ideas of health are renewed in a modified and exalted form in the state of disease; and as the tenor of the mind when awake, determines, in a great measure, the nature of our dreams—so does the stamp of the sane intellect throw the hue of its colouring over the Imaginations of the insane.* The vain are apt, in this condition, to imagine themselves queens and princesses, and are more greedy of admiration, than ambitious of power. This turn of the insane mind is peculiar to females. It is well exemplified in some of Madge's ditties:—

* This is not only true as it relates to individuals, but as it regards the monomaniacs of a whole nation taken collectively. An author of great merit has asserted that the history of a country may be in some measure traced by the Imagination of its insane inhabitants. During the age of chivalry, the grand feature of the monomaniac was sentimental affection: when Europe was agitated with the Reformation, and the truths promulgated by the dauntless Luther shook the foundations of Catholicism to the very centre, religious enthusiasm became the prevailing idea in the Imagination of the insane. For this reason monomania has generally the national character; haughty and superstitious in the Spaniard—soft and pleasing in the Italian; gay among the French—gloomy and reserved in the inhabitants of Britain. Of course, in addition to this must be taken into consideration the peculiarity of individual minds, their prevailing disposition, and the causes, the griefs, the losses, or the provocation which were the exciting cause of the disease.

"I'm Madge of the country, I'm Madge of the town,
I'm Madge of the lad I am blithest to own ;
The lady of Beaver in diamonds may shine,
But has not a heart half so happy as mine.

"I'm queen of the wake, and I'm lady of May,
And I lead the blithe ring round the May-pole to day ;
The wild-fire that dances so fair and so free,
Was never so bright or so bonnie as me."

Bred at a distance from the court, and in an obscure village, the Imagination of Madge wonderfully adapts itself to the circumstances of her previous life. Had she been accustomed to society of a higher order, she would probably have fancied herself a royal queen, but the fancy having no materials of this kind to work upon, she exalts herself to that dignity which, in rural sport, is generally awarded to the most beautiful. The tenor of all this maniac's history strictly accords with the illustration I have given of it ; but her death-bed scene is one of the most feeling that the pen of the narrator or historian ever sketched. In the most violent and perfect maniacs, alarming disease very commonly partially or completely restores the mental faculties ; the body acts by way of revulsion upon the mind, and the disorder appears to be removed from one by the action of disease in another. Most commonly this return of consciousness is rather an unsteady twinkling than a fixed and brilliant light. The mind seizes ideas which it fancies are not new ; looks upon objects in a truer light. The causes of its observation become apparent ; and however gay the paroxysms of the disorder may have been, there is frequently a tinge of profound melancholy attends these periods of mental health, especially where the occasion of its overthrow has been crime, or great misfortune. When these periods immediately precede dissolution, as they frequently do, there is always an instructive "persuasion" of its approach. The maniac is aware that his troubles are past, that his toils are at an end, that his grief and his gaiety, the troubles of his spirit, and the wanderings of his Imagination, will all sleep the sleep that knows no waking.* All the wanderings of Madge's partially restored mind

* "It is rare," says Foville, "that the insane die in a state of mental alienation ; they generally fall victims to some bodily disorder, and the mind recovers, in some measure, its sanity before dissolution. Even where the most complete fatuity has been produced by long continued mental derangement, an unsteady glimmering of reason occasionally returns. The intellect appears to approach once more the throne of reason, to linger about the scenes in which she once delighted, and to recal for once more, and but for a moment, ideas which she once possessed, and which she is about to part with for ever." How true is our author's character to nature !

upon her sick bed, centre in her approaching death, and the whole of the portions of old ballads collected in her roving and desultory life bear upon this point.

“ Our work is over, over now ;—
The goodman wipes his weary brow,
The last long wain winds slow away,
And we are free to sport and play;
The night comes on, when sets the sun,
And labour ends when day is done;
When autumn's gone and winter's come
We hold our jolly harvest home.”

Again, in a strain of a different character—

“ When the fight of grace is fought,
When the marriage vest is wrought,
When faith hath chased cold doubt away,
And hope but sickens at delay,
When charity, imprisoned here,
Longs for a more expanded sphere;
Doff thy robes of sin and clay,
Christian, rise ! and come away.”

The next snatches are extremely pathetic, and indicate a greater degree of consciousness than was exhibited by the former. Memory assumes more power, and the poor maniac looks back with sorrow and shame at the crimes and misfortunes of her past life, and her once happy home—contrasts it with her present situation as an out-cast on the bed of charity ; and prophecies that an evil and sudden termination of existence must attend the author of all her miseries :

“ Cold is my bed, Lord Archibald,
And sad my sleep of sorrow ;
But thine shall be as sad and cold,
My false true love, to-morrow.
And weep ye not my maiden's free,
Tho' death your mistress borrow ;
For he for whom I die to-day
Shall die for me to-morrow.”

Her last words relate to her burial, which a strange mixture of ideas confuse with a wedding :

“ ‘ Tell me, thou bonnie bird,
When shall I marry me ;’
When six braw gentlemen
Kirkward shall carry ye.’

'Who makes the bridal bed ?

Birdie, say truly ;'

'The grey-headed sexton,
That delves the grave truly.

'The glow-worm o'er gravestone,

Shall light there steady ,

The owl, from the steeple, sing

'Welcome, proud lady !' "

Such are the examples I have chosen to illustrate the Imaginations of that form of mental derangement termed *mania mitis*, *amemomania*, or gay melancholy.

The next species of morbid imagination constituting insanity which I shall notice is that commonly termed *tristimania*, *tedium vitæ*, or sad melancholy. It is not necessary for me here to notice the propriety or impropriety of these terms, or to what particular form of mental derangement they should or should not be applied. It is sufficient to state that they here exclusively refer to that form of disease in which the ideas are clothed in a shade of the deepest gloom ; reasoning after a fashion, it is true, upon the nature and moral aspect of events, but shadowing them all with the mists of a distempered fancy. These people look always on the dark side of things. To them the world has no sunshine, no pleasure ; their mind is a crucible of peculiar construction, that extracts nothing but misery and bitterness from whatever materials it may analyze. All is of

"Blackest midnight born,

In Stygian cave forlorn ;—

Mid'st horrid shapes, and shrieks, and sights unholy."

This species of insanity is dependent altogether upon the natural constitution of the mind. In many instances it is merely a morbid exaltation of the usual mental phenomena. The sane and the insane mind are constituted of the same materials, and after the same type ; and it is a general exaltation of its functions, or a derangement in the mode or reciprocity of their actions, which produces the insane state. I shall illustrate the nature of this affection from the character of Hamlet, and I have many reasons for doing so. It is the completest history of melancholy madness and the state of mind which precedes it that has ever been given. "Its first symptoms, and their progression to, and ultimate termination in, confirmed insanity, are illustrated with singular exactness ; and it is a remark-

able coincidence that every predisposing and exciting cause by which the author could denote an intention of making his hero-subject to paroxysms of insanity, has been clearly developed in the course of the five acts. The stages of the disease are distinctly marked from the first scene of Hamlet's appearance, when he expresses a disrelish of life, until the violent explosion of his madness at the grave of Ophelia."*

Hamlet's mind appears, from what we can collect of his previous history, to have been one of great power and depth. Well versed in the literature and philosophy of his day, naturally disposed to retirement, he possessed all the character of Milton's *Il Penseroso*. The arched walk of twilight groves and shadows brown—the studious cloister pale—were the places in which he delighted, and not the pageantry of royalty or the vain delight of giddy pleasure. This natural bias has been recognised on all hands as the precursor of melancholy madness. Hippocrates tells us that the chief reasons which led the citizens of Abdera to suspect Democritus of insanity was, that he forsook the city, and lived in groves and hollow trees, upon a green bank by a brook side, or by a confluence of waters, day and night.

The first scene in which Hamlet is introduced, shews us the state of his mind and the *tedium vitæ* under which he laboured; though the tendency to suicide, which it would not have been in an advanced stage of his disease, is controlled by religious fear:

“Oh! that this too, too solid flesh would melt,
Thaw, and resolve itself into a dew!
Or that the Everlasting had not fix'd
His canon 'gainst self-slaughter!
How weary, stale, flat, and unprofitable
Seem to me all the uses of this world!
Fie on't! O fie! 'tis an unweeded garden,
That grows to seed; things rank and gross in nature
Possess it merely.”

The truth of this description of the mental state of approaching melancholia, admits of corroboration from numerous and well-authenticated facts. Erasmus Darwin tells us of a gentleman who said to him “a ride out in the morning, and a warm parlour and pack of cards in the afternoon, are all that life affords.” In a few months afterwards he destroyed himself.†

* *Illustrations of Mania, Melancholia, Craziness, and Demonomania, as displayed in the characters of Lear, Ophelia, and Edgar, by George Farren.*

† Darwin's *Zoonomia*.

The insufficiency of natural beauties, of the harmony of the universe, of the ordinary pursuits of life to produce mental ease, are next exemplified in the address of Hamlet to Rosencrantz and Guildenstern ; and it is a curious fact that most writers on this disease have taken Shakspeare's description of it, finding it so true to nature, and aware that no composition of their own could possibly convey the same ideas so well. "I have of late, wherefore I know not, lost all my mirth, foregone all custom of exercise, and indeed, it goes so heavily with my disposition, that this goodly frame, the earth, seems to me a sterile promontory ; this most excellent canopy, the air, this brave o'erhanging firmament, this majestic roof, fretted with golden fire—why, it appears no other thing to me, than a foul and pestilent congregation of vapours. What a piece of work is man ! How noble in reason ! how infinite in faculties ! in form and motion, how express and admirable ! in action, how like an angel ! in apprehension, how like a god ! the beauty of the world ! the paragon of animals ! And yet, to me, what is this quintessence of dust ? Man delights not me !"

The very pursuits of minds thus disposed all tend toward the same subject ; their studies, their favourite authors, have all a misanthropic tinge. Thus we find Hamlet introduced reading that passage in the tenth satire of Juvenal, beginning

"Da spatium vitæ, multos da Jupiter annos,"

in which old age is dispraised, and the natural defects attendant upon advanced life set forth in most dishonest satire. Hamlet's madness, like that of melancholy generally, is not one continued stream of mental aberration, not one long uninterrupted chain of monotonous woe, but a moody, wayward affection, pregnant with the most poignant wit, shadowed with the deepest gloom, or occasionally, but rarely, breaking forth into paroxysms bordering upon the violence of mania. His accumulated misfortunes—the murder of his father—the marriage of his mother—the derangement of Ophelia—and the loss of his kingdom—render that alienation of mind at length real which was only, in the first instance, assumed as a mask. We cannot fail to be struck with the peculiar pertinence and tartness of some of the replies of Hamlet, especially in his conversations with Rosencrantz and Polonius ; and this may be supposed to be discordant with the state of mental disease under which he labours.

It may appear strange to those who have not studied the subject, that persons possessed of a defective judgment should at any time be

of quick and lively apprehension, and thus be witty without being wise. But the faculty of wit is not dependent so much upon the judgment as upon the imagination. "And hence," says Mr. Locke, "some reason may be perhaps given for that common observation that men who have a great deal of wit have not always the clearest judgment or the deepest reason. For wit lying most in the assemblage of ideas, and putting those together with quickness and variety, wherein can be found any resemblance or congruity, thereby to make up pleasant pictures and agreeable visions in the fancy. Judgment, on the contrary, lies quite on the other side, in separating carefully one from the other ideas, wherein can be found the least difference, thereby to avoid being misled by similitude, and by affinity to take one thing for another. And hence we may easily account for that gaiety, and those ebullitions of a vivid fancy, which so often assume the character of wit in persons whose minds are deranged." How wonderfully has this property of the Imagination of the insane been analyzed by Shakspeare :

"How pregnant sometimes his replies are !
A happiness that often madness hits on,
Which sanity and reason could not be
So prosperously delivered of."

How powerful a faculty of the human mind is the Imagination ! and how necessary is it for persons in whom it is apt to reign paramount to the judgment, to acquire, by all artificial means, some control over it, which nature has not given them. In the cases which we have been considering, those of Hamlet and the French watch-maker, an encouragement of its undue prevalence was the principal cause of their insanity ; and though, with the exception of some rare instances, the Imagination itself might not actually become so tyrannical as to render the individual insane without the application of some powerful moral affection, still this unequal balance between it and the judgment render the mind less capable of resisting any shock which, in the varied tenor of human occurrences, it is so likely to receive. When thus indulged, the mind does not view the objects around it in their proper light and natural relation ; it takes part of their properties only, and forms them into combinations which are incongruous and unnatural. Acting upon data thus constituted, the conclusions which it draws cannot possibly be sound, since the premises upon which it acts are either decked in borrowed beauty or distorted by ideal deformity. The mind thus becomes like a bad mirror, which throws shades upon beauty,

and, by its unequal reflection of the different parts of an object, give to it a false and unreal aspect. The various kinds of insanity springing from superstition and fanaticism are all the result of this diseased condition of the Imagination. A most curious instance illustrative of this is recorded, in the German *Psychological Magazine*, of a gendarme, of Berlin, who, being disquieted in his mind, sought alleviation in the perusal of religious books. In reading *The Bible*, he was struck with the book of Daniel, and so much pleased with it that it became his favourite study; and from this time the idea of miracles so strangely possessed his imagination, that he began to believe he could perform them himself. "He was persuaded, more especially, that if he were to plant an apple tree with a view of its becoming a cherry tree, such was his power, that it would bear cherries. He was discharged from the king's service, and sent to the workhouse, where he conducted himself calmly, orderly, and industriously for two years, never doing any thing that betrayed insanity. He answered every question correctly, except when the subject concerned miracles, in regard to which he maintained his old notions; adding, however, at the same time, that if he found on trial, after he was at home, that the event did not correspond with his expectation, he would readily relinquish the thought, and believe he had been mistaken. He confessed that he had already removed one error from his mind in this way, for there was an old woman whom he had, at one time, considered to be a witch, but whom *he afterwards discovered to be no such thing.*"*

* The same species of morbid Imagination constituting the insane state, sometimes extends from one individual to many, to the whole inhabitants of the same family, community, town, or nation; as the history of some particular epidemics of this kind well illustrates. Of such character was the dancing mania of the 16th century, (a complete notice of which has lately been given us by Dr. Babington, from the German of Hecker), in which both the disease and its cure, which was effected by music, were solely to be traced to the workings of a diseased fancy. Affections of this kind have been attributed, by Foville and others, to the simultaneous action of moral impressions of the same character upon a number of individuals at once. We cannot, however, conceive of moral impressions of a similar character producing the same effects upon the inhabitants of a whole nation, or spreading even further than this; for the dancing mania extended over the whole of central Europe. I am led rather to attribute it to the faculty of imitation, or instinct of imitation, as it has been termed; the mental impression having primitively been made upon the few, or upon one, and afterwards spreading from the exercise of this peculiar faculty to many. The Imagination is commonly led captive through the credulity

I come now to speak, shortly, of those forms of mental disturbance in which the Imagination is called forth in its most energetic forms; where, the judgment exercising no part of the mental faculty, the mind is given up to the vacillating and uncertain government of the former.

I need not repeat what has been recognised by the only two judicious writers on insanity with whom I am acquainted, Pinel and Esquirol, that the peculiar form of alienation is regulated altogether by the previous constitution of the mind, and that this scarcely ever takes place without a powerful predisposition. This predisposition to mania is different from that which formed the precursory stage of craziness and melancholy. The individual is generally characterized—not by a powerful judgment, a brilliant and lively wit, or profound thought—but, by great energy of purpose, sudden and quick in his determinations, violent in his affections, and implacable in his hatred, embracing the most exaggerated schemes with an enthusiasm which in itself is hardly indicative of perfect sanity. His imagination is ardent, the visions which it produces full of life and fire. His is the royal road to fame; the whole energy of his intellect is bent on the accomplishment of his designs. Obstacles disappear, as it were by magic, from before him; he is impetuous, ungovernable, and impatient of controul. The fancies of his dreams are similar to the determinations of his waking hours: he dreams not of the calm sea, of the peaceful home, but of the tempest, the hurricane, and the tornado—not of the arts of peace, but of the din of war. So active is the imagination of these persons, that somnambulism is a frequent occurrence with them: the hurry of their mind will not allow them time for needful repose. The imagination of the maniac is a perfect chaos, having no direction, no harmony, no

or from the narration of others, and not from actual impression first made upon the mind so influenced. Many curious examples in illustration and support of this remark, are to be found in Walker's *Lives*, in Sir W. Scott's *Letters on Demonology*, and elsewhere. The instinct or faculty of imitation is widely extended in nature, possessed by all animals and man, and in greater power by the latter as he is less civilized or less intellectual, approaching more to the state of the brute or the savage. Hence we find diseases in which the faculty of imitation is concerned, almost peculiar to the ages of ignorance and superstition. Hence all the epidemic diseases springing from a distempered fancy occurred in the ages and countries where fanaticism prevailed, when the laws regulating the phenomena of natural occurrences both in physics and physiology were utterly unknown, and where the promulgator or advocate of truth was branded as an atheist for his unbelief in the errors which surrounded him, and happy if his talents or his zeal did not hurry him to the cells of the Inquisition, to the scaffold, or the rack.

predominant feeling or idea, no leading affection, no cherished sorrow : all is desultory, wandering, and terrific. A General, rendered insane, threatened the sun-beams which offended him with the vengeance of his whole army. The slightest bodily pain, the minutest physical evil, contradiction, or mistaken moral perception, excite a train of imaginary feelings of the most violent character. I shall illustrate the imaginations of the maniac from the *Lear* of Shakespeare, and the *Orestes* of Euripides. The first scene in which Lear is introduced dividing the kingdom with his daughters, perfectly illustrates that impetuosity of character, that morbid feeling, which is not satisfied without the most hyperbolical and exaggerated expressions of attachment. The plain and modest declaration of filial affection on the part of Cordelia, does not satisfy Lear ; but he breaks forth into a declamation of the most violent character, and for a word mis-spoke or wrongly taken, casts the child of his love portionless upon the world :

“ Let it be so.—Thy truth then be thy dower :
 For, by the sacred radiance of the sun ;
 The mysteries of Hecate, and the night ;
 By all the operations of the orbs,
 From whom we do exist, and cease to be ;
 Here I disclaim all my paternal care,
 Propinquity and property of blood,
 And as a stranger to my heart and me
 Hold thee, from this, for ever. The barbarous Scythian,
 Or he that makes his generation messes
 To gorge his appetite, shall to my bosom
 Be as well neighbour'd, pitied, and reliev'd,
 As thou, my sometime daughter.”

Speeches of this character, shewing the predisposition to mania in Lear, might be multiplied to almost any extent from the earlier scenes of this magnificent play, especially his curse of Goneril, for refusing to entertain his full complement of knights.* On Lear's

* These dreadful explosions of rage would at once indicate the predisposition to mania, even if they were elicited by some provocation proportionate to their violence ; but when we see them called forth from trifling causes, we cannot fail at once to be struck with a peculiar disposition of mind approaching to ungovernable fury : as thus—

“ You nimble lightnings, dart your blinding flames
 Into her scornful eyes ! Infect her beauty,
 You fen-suck'd fogs, drawn by the powerful sun,
 To fall and blast her pride !

first coming to the knowledge of the ingratitude of Regan, Shakespeare again displays his intimate knowledge, not only of the workings of the human passions, but of those bodily affections with which they are occasionally attended. Thus :

“ O ! how this mother swells up tow’rd my heart !
Hysterica passio ! down, thou climbing sorrow !
 Thy element ’s below !”

I bring forward a case to illustrate the truth of this description of the poet’s:—A person was subject to paroxysms of insanity, of which the first symptoms were heat in the region of the stomach, which was felt to ascend progressively to the chest, neck, and face. To this succeeded a flushed countenance ; and no sooner was the head invaded, than he was seized with an uncontrollable propensity to commit deeds of violence and bloodshed.

The mind of the person predisposed to mania, is seldom completely disorganized without the occurrence of some strong mental impression addressed immediately to itself—as inordinate grief for the loss of friends or property, disappointed ambition, remorse, woe, “ soul-stifling fear,” or “ heart-sickening shame.” The approach of the attack is sensible to many, and is finely described by Lear :

“ My wits begin to turn.—
 Come on, my boy. How dost, boy ? art cold ?
 I’m cold myself. Where is the straw, my fellow ?
 The art of our necessities is strange
 That can make vile things precious. Come, your hovel.
 Poor fool and knave, I’ve one string in my heart
 That’s sorrow yet for thee.”

The maniac lives an isolated being in the moral and physical world which surrounds him. The ideas and images which his imagination forms, are without order or connection, continually reproduced by new impressions, and at once fading from the memory ; and like the impression of a seal upon the wave, leaving no trace behind them. He is incapable of distinguishing the properties or nature of things ; but, carried away by ideas which are produced from memory, he confounds time and place, fancies himself in distant countries, and takes the greatest strangers for his most intimate friends : he creates the most absurd pictures, holds the most ridiculous conversations, and unites in one grand monument of folly, the sublime, the absurd, the monstrous, the horrible, and the pathetic. The equilibrium between actual and present perception, and the ideas which memory furnishes, is destroyed ; and the activity of the

Imagination is so great, that it presents to him in their pristine and original colours scenes which have been long past.

Many of these points are illustrated by the conversations of Lear, during his paroxysms of mania. His discourses with Mad Tom during the tempest—"first let me talk with this philosopher. What is the cause of thunder?"—and again,—“I'd speak a word with this most learned Theban.” Perhaps the master-stroke in this part of the play is the fancied trial of Regan and Goneril for their ingratitude, and his investment of his vagabond companions and the disguised Kent with the appurtenances belonging to the administrators of justice. Thus Lear:

“It shall be done, I will arraign them straight :—
Come, sit thou here, most learned justicer ;
Thou, sapient Sir, sit here. Now, you she foxes !”

Again—

“I'll see their trial first :—Bring in the evidence.—
Thou robed man of justice, take thy place ;
And thou, his yoke-fellow of equity,
Bench by his side :—You are of the commission,
Sit you too.”

“Arraign her first ; 'tis Goneril. I here take my oath, before this honourable assembly, she kicked the poor king her father.”

“And here's another, whose warp'd looks proclaim
What store her heart is made of.—Stop her there !
Arms, arms, sword, fire !—Corruption in the place !
False justicer, why hast thou let her 'scape ?”

This utter chaos of the Imagination is highly descriptive of the mental imagery of the maniac ; so wild, so wandering, occasionally so absurd, and again so natural and pathetic as in this speech ; “Let them anatomize Regan, and see what breeds about her heart. Is there any cause in nature that makes these hard hearts.” The maniac's imagination surrounds him with angels and demons : he holds conversations with them, promises them obedience, flies from their fancied denunciations and horrible forms, and conducts himself as though his chamber or his cell were actually peopled by the beings that exist merely in his imagination. An unfortunate being, under this variety of mental derangement, fancied that he saw devils constantly about him ; and one day rushed upon a party of visitors as upon a legion of demons. Another, during the day, was generally tranquil, but, at night, fancied himself surrounded by ghosts and phantoms, At different times he had imaginary confer-

ences with good and bad angels, and, according to the respective influences of these delusions, he was mild or furious—inclined to acts of beneficence, or roused to deeds of ferocity. This feature of the imagination of the maniac has not escaped the penetration of some of the Greek poets, who were extremely partial to illustrations of madness, and fond of peopling the diseased minds of the guilty maniacs, and pursuing their footsteps with the furies. The finest example of this, perhaps, in the whole range of Greek literature, is that wonderful scene in the *Orestes* of Euripides, where the madness of Orestes for the murder of his mother, Clytemnestra, is represented :

“ Ah ! mother, do not set thy furies on me ;
 See how their fiery eyeballs glare in blood !
 And wreathing snakes hiss in their horrid hair !
 There, there they stand ready to leap upon me.
 Oh ! Phoebus, they will kill me ; these dire forms,
 These gorgon-visag'd ministers of hell !
 Off ! let me go !—I know thee, who thou art,
 One of the furies, and thou grapplest with me
 To whirl me into Tartarus.—Avaunt ! ”

I am, perhaps, a little anticipating the subject of my last lecture, by mentioning the hallucinations produced by the Imagination ; but they are so intimately connected with the fancies of the insane, that they will hardly be considered out of place.

I have endeavoured, in my former papers, to trace the general phenomena of the Imagination ; but their limits would not permit me to bring forward that vast body of facts, as yet scattered through the whole domain of literature, which completely illustrate its power. Our mental health altogether depends on the due regulation of the Imagination. Most men, from natural tendency, from peculiar turn of mind, at first determined by chance and confirmed by education, are apt to take up some leading idea, and to foster it to the prejudice of their judgment. When this is the child of passion, the case becomes of a more serious character, since our passions, rather than our literary or scientific pursuits, enchain the subordinate faculties of the mind, making the whole of these faculties subservient to one governing and absorbing power. Ambition, desire of fame, fear, love, and anger, are those from which we have, perhaps, most to fear. It is, in many instances, the unlimited indulgence of one of these, which lays the foundation for that predisposition to insanity, without which it seldom occurs. The Imagination itself, when continually bent towards one point, and limited to one

set of ideas, whether of a pleasing or gloomy character, may become permanently exalted and produce a partial alienation of mind, which the lifting of a finger or the shaking of a straw may precipitate into an abyss of incurable melancholy or mania. I have endeavoured in this paper—and it has been an undertaking of considerable difficulty—to trace these exalted states of the Imagination, which predispose to the different turns of mental aberration. The limits of a single paper, of course, would not permit me to pursue them to a great extent: I have given the outline, and leave others to complete the picture. The track which I have chosen has been nearly an unbeaten one; the road has been clogged with rubbish, overgrown with weeds, and some little labour has been required to form a new road, which at present is extremely rugged. Uniform study, or unremitting manual or mental application to one subject—especially if this be pursued with the ardour common to many minds—not unfrequently wears a track in the brain, down which the Imagination rushes with destructive violence. The great object in the regulation of mental sanity, is to divert this single stream into many smaller channels, which, by their uniform and gentle motion, will visit and strengthen all the mental powers, instead of concentrating their whole force in one, which, from the violence and impetuosity of its career, rests not till it has included all in one general wreck.

“At Saragossa, in Spain, there is an asylum for the insane of all countries. The patients are divided, early in the morning, into parties, some of which perform the menial offices of the house; others repair to shops belonging to their respective trades: the majority are distributed, under the superintendence of their guards, through a large inclosure, where they are occupied in the works belonging to gardening and agriculture. Uniform experience is said to prove the efficacy of these labours in reinstating reason in its seat. It is added, that the nobles who live in the same asylum, but in a state of idleness suitable to their rank, retain their lunacy and their privilege together; whilst their inferiors are restored to themselves and to society.”* This fact is so striking, explains so thoroughly the moral treatment of insanity, and illustrates so clearly what ought to be the plan adopted in all systems of education, that I make the statement without comment—since no argument can add to its weight, and no sophistry detract from its utility.

* Beddoe's *Hygeia*.

HEWITSON'S "BRITISH OÖLOGY."

OF the numerous contributions to ornithology with which the press teems, there are few illustrated works of greater interest to the naturalist than the admirable series of representations of British eggs now in progress of publication by Mr. Hewitson. Two volumes have been completed, in which the eggs of one hundred and forty-two species, and in all two hundred and twenty-two specimens, have been figured, for the most part, with the utmost accuracy; so that the possessor of these volumes may be said to enjoy the advantages of a valuable cabinet, such as few could ever hope to obtain, and none without a considerable sacrifice of time and money. There are few naturalists but can well appreciate the usefulness of a work of this description, were it only for the important assistance afforded in grouping birds according to their true affinities, which, in general, are beautifully indicated in their eggs. Mr. Hewitson's work furnishes likewise a fund of curious information relative to the nidification and habits of birds during the breeding season. We only regret that, in so many instances, a whole plate has been devoted to a single egg, while the great variations of appearance incident to those of many species are by no means illustrated to the extent we think desirable. In proceeding to give a critical analysis on the whole series, it is necessary to premise that the work originally appeared in periodic numbers, which are still continued, the only method in which an undertaking of this sort could be successfully prosecuted; but as the volumes before us are bound up according to Selby's arrangement—which is so far advantageous as it brings the different members of a genus together—it will be more convenient to notice them in this order than in the irregular manner in which they were necessarily published.

Our first volume, then, opens with a beautiful figure of the egg of the Golden Eagle, *Aquila chrysea* (*Falco chrysætos*, of Linneus). This is accompanied with a brief description of its nidification, making the bird out, however, a little too rare, if we may judge from Mr. Selby's account of the birds of Sutherlandshire.* "In the mountainous districts," says Mr. Selby, "this species is still tolerably abundant, although every device is put in practice to capture or destroy them by the appointed fox-hunters and shepherds, the premi-

* Vide Jameson's *Philosophical Journals* for January and April last.

ums paid for the adult birds, as well as for the eggs and young, being liberal. They attack and often prove very destructive to the young lambs, particularly when their eyry is not far distant from the lambing district of a farm. They are sometimes taken in traps, but more frequently shot, after patient and sometimes long continued watching. They breed in the highest and most inaccessible precipices, and it is rarely that the young or eggs can be got at, even by the dangerous experiment of suspending a person by a rope from the summit of the cliff in which the eyry is placed. Several hair-breadth escapes, as well as fatal accidents, were narrated to us by individuals who had been engaged in these undertakings.* We

* To those who have not read Mr. Selby's paper on the mammals and birds of Sutherlandshire, the following extract will be replete with interest. "The mountainous and rocky character of the greater part of the county, abounding as it does in cliffs of vast perpendicular height, renders it a district peculiarly favourable to the large raptorial birds, such as the Golden and Cinereous Eagles, Peregrine Falcon, &c.; and accordingly we find these powerful species still pretty numerous, though every device is resorted to for their destruction, on account of the havoc they commit upon the flocks. The same may be said of the Fox, the Marten, and the wild Cat, which find protection in the numerous fastnesses of the rocks, and in the caves which abound in the limestone districts. The following list, copied from a document furnished by Mr. Baigrie, of the Foxes, Martens, Cats, Eagles, Ravens, &c., destroyed in the county within the last three years, will afford some idea of their numerous distribution; and the amount of premiums paid, the liberal inducement held out for their destruction.

"List of vermin destroyed, and premiums paid for the same, on the Duchess-Countess of Sutherland's estates in the county of Sutherland, from March, 1831, to March, 1834.

	£.	s.	d.
71 Old bitch Foxes, @ 42s.	149	2	0
49 Young ditto @ 20s.	49	0	0
70 Old dog ditto @ 15s.	54	15	0
46 Young ditto @ 7s. 6d.	17	5	0
901 Wild Cats, Martens, and Fumarts, @ 2s. 6d.	112	12	6
418 Weasels [and Stoats], @ 1s.	20	18	0
263 Otters, @ 5s.	65	15	0
171 Full-grown Eagles, @ 21s.	179	11	0
53 Young ditto and Eagles' eggs, @ 10s.	26	10	0
936 Ravens, @ 2s.	93	12	0
1055 Hawks, @ 1s.	52	15	0
1739 Carrion Crows* and Magpies, at 6d.	43	9	6
548 Kingfishers,† @ 6d.	13	14	0

£878 19 0

* All of the species *Corvus cornix*, or Hooded Crow.

† The Dipper is so called throughout Sutherland and other parts of the Highlands. The *Alcedo ispida* is rarely seen.

have only seen two eggs of this species, than which the specimen represented by Mr. Hewitson is somewhat more decidedly mottled. It is of a dirty white, obscurely clouded, chiefly at the large end, with small blotches of pale rufous brown, of different degrees of intensity. Altogether it is beautifully illustrative of the bird's affinities.

Cinereous Erne, *Halæetus albicilla* (*Falco albicilla*, of Linneus, *Whitetailed* or *Cinereous Sea-eagle*, of most of its describers). A large, dull, white egg, faintly marked with a few brownish blotches. "The few specimens," says Mr. Hewitson, "which I have examined are either altogether spotless, or, like the plate, very faintly marked. I think it most probable that some will be found much more boldly spotted."

Plate III. (XXIV. in the series of publication) contains two figures of the egg of the European Hawk, *Accipiter Europæus* (*Falco nisus*, Linneus; *Sparrowhawk* of most naturalists. We prefer the unobjectionable term, *nisus*, *fringillarius*, and the like, being necessarily equally applicable to every species of *Accipiter*, and besides, conveying too low an estimate of the predatory powers of these birds, as does also the vernacular *Sparrow-hawk*. *Europæus* can only apply to this species. Few persons are unacquainted with the egg of this bird, which is admirably represented by Mr. Hewitson. Fig. 1. presents its ordinary aspect; fig. 2. a variety. In some eggs, the author states, the markings are very faint.

In the next plate are two excellent representations of the Peregrine Falcon's eggs (*Falco peregrinus*), much resembling, except in size, those of the Kestrel Falcon, with which most naturalists are familiar. Fig. 2. presents the usual appearance, fig. 1. that of a variety shewing more of the pale colour than is usual, at (what in most eggs would be called) the smaller end. The eggs of all rapacious birds are very elliptical, nearly approximating, in some instances, to round. In the Falcon genus they are mostly of a dark, rufous tint, which is occasionally broken into ill-defined and confluent rufous spots upon a pale ground, accompanied with markings of a still deeper colour. In *F. columbarius*, of North America, a deviation from the Falcon type is perceptible, in the similitude of the eggs to those of the short-winged Hawks, which have the

"Upon such a system, which is now supported by the lessees of the estate, it is not improbable but that, in a very few years, some of the species of the raptorial birds and carnivorous quadrupeds may become extinct."—*Edinbro' New Philosophical Journal* for January, 1836.

ground colour much clearer, and the markings more confined, and indistinct dashes.

Two eggs of the Kestrel Falcon (*F. tinnunculus*) occupy the next plate. Fig. 1. minutely dotted with reddish brown, on a pale ground, with a few larger scattered spots of a darker colour. Fig. 2. is more confusedly tinted, and, according to the author, "very much resembles the eggs of the Hobby which I have seen, and also some of those of the Merlin. Fig. 1. is the most common." We consider intermediate specimens to be most abundant. Of this species, Sir W. Jardine relates that "it is remarkable that perhaps more Kestrels build and bring to maturity their young in *London*, than in any space of the same dimensions: the breeding places selected are the belfries of the different churches, where neither the bustle beneath, nor the jingle of the bells, seems to have any effect upon them."* It is not at all uncommon to see them upon St. Paul's, and on Westminster Abbey, where sometimes may be distinguished even the Peregrine, as, we think, Mr. Audubon observes, a species which is never seen in the suburbs, a very few minutes flight sufficing to transport it a distance of many leagues.

The next plate exhibits two almost spherical eggs of the Common Buzzard (*Buteo vulgaris*); one spotless white, the other very distinctly marked, principally at the larger end, with dark brown spots, of various sizes. Some very interesting information is annexed. "The eggs, which are three or four in number, vary much, according to the age of the bird, being sometimes entirely spotless. The beautifully marked one here figured is from the collection of Mr. R. R. Wingatt, who had the eggs brought him from the same place for some years, and, no doubt, the produce of the same bird. The first year they were white, or nearly so; the second, slightly marked with a dirty, indistinct, yellowish brown, increasing each year in intensity, till they assumed the beautiful colouring of the plate. The spots are mostly larger and lighter, and the surface of the egg is smeared, here and there, with indistinct colouring.

We have next a couple of figures, both spotless, of the eggs of the Rufous Harrier (*Circus rufus*) and Montagu Harrier, (*C. Montagui*); the former white, the latter, of course, smaller, with a bluish tinge. The author states, however, that the eggs of the Rufous Harrier, "although for the most part white, are sometimes also spotted and smeared with brown, in the same manner as those

* Note to his edition of Wilson, vol. ii., p. 34.

of the Hen [common] Harrier's. I have not, therefore, thought it necessary, to give a figure of the spotted variety." There are some interesting remarks on the nidification of the Rufous Harrier, as indicative of its affinity to the genus *Buteo*. Of the Montagu Harrier, Mr. Hewitson says, "the eggs are usually four or five in number: the nest from which specimens are now in my cabinet, contained six—the only instance Mr. Baker [who has found many] has ever met with. They are of a clear white, distinctly tinted with light blue, and are never (to the best of my information) spotted." Most probably, however, examples more or less speckled do occasionally occur.

Two specimens of the eggs of the Common Harrier, (*C. communis*: we prefer this term, as it is a bird of very general distribution, and the appellations *cyaneus*, *cinerarius*, &c., are of generic, rather than of specific application. *Common* is also a better epithet than *Hen* Harrier). The eggs of this bird, "though perhaps, most frequently of a bluish-white, are yet very often marked with light spots of yellowish-brown, mixed with a purplish hue, and in some instances, as shewn in the second figure of the plate, with deeper and more distinctly defined spots of brown. The eggs of the three species of Harrier may be readily known from others nearly allied to them, by the fine greenish-blue of the inside, which may be seen upon holding them up to the light."

All the Owl family lay very similar white eggs, and in two plates are represented those of four species, viz., the Long and Short-tufted Madge, the Barn Owl, and the Tawny Hooter. Of the last-mentioned, it is stated, that, "unlike most birds, she begins to sit when the first egg is laid: it is hatched, in consequence, some days before the last." The same may be asserted of the Barn Owl.

Eggs of the Kingfisher and Bee-eater next present themselves, both of a shining white and nearly spherical; the former rather exceeding in size that of a Corn Bunting, the latter about equal to a Song Thrush's egg. The Kingfisher, says Mr. Hewitson, "lays six or seven eggs, sometimes upon a collection of small fish bones, but I think more commonly on the bare sand." From our own observation, we are disposed to consider the former more usual, these birds mostly nestling in the hole that they had long previously occupied for retirement and for a place to roost in, and where they continually disgorge the innutritious remnants of their food till a thick layer has accumulated; though certainly with no instinctive reference to their future progeny.

Three eggs of the Chimney Swallow, (*Hirundo garrula*), ex-

hibiting a moderate degree of variation, but neither of them what we should consider as *exactly typical* of the egg of this species. No. 1 is, as the author states, the most common; 3 has the spots fewer and of larger size; 2 is intermediate. A frequent variety is thickly besprinkled with rufous spots, rather larger than in No. 1. A few dusky specks are always discernable. We have known the nest of this species to be situate in the hole of an elm, about twenty feet from the ground. From such a place, we once saw three young ones taken.

Eggs of the Eave Swallow, Bank Swallow, and Swift, all white, differing only in size. We disagree with Mr. Hewitson, about the Swift's nidification. Granting that it will often usurp the domicile of a House Sparrow, and therein lay without further preparation, we happen to know that it will as frequently construct a curiously cemented nest of its own, and this in a very short space of time. Several such nests are in the writer's cabinet.

One egg of the Motheater, or Evejar, (*Phalacrocorax Europæa*, *Caprimulgus* of Linneus), most unnecessarily occupying a whole plate. We possess perfect fac-similies of this representation, but, nevertheless, consider it of too light a colour for an average example. Another variety might have been advantageously introduced.

An egg of the Collarless Pyeet (Pied Flycatcher of most authors), and two of the Grey Flycatcher (*Muscicapa grisola*). The former of a deeper blue than those in our cabinet, or than any that we have hitherto seen, which, in general, have been also much rounder; but no doubt a correct representation of the specimen drawn from. We are informed, however, that "the eggs differ considerably in size and conformation, those contained in one nest being unusually small, nearly oval, and almost white." We have known several instances of this bird breeding in the south-eastern counties, but it is of excessively rare occurrence. It is remarkably attached to the place it has once selected for nidification, and will not desert the hole though robbed repeatedly. In an instance wherein the eggs had been destroyed by a Snake, another nest was built upon the broken egg-shells contained in the last. The Pyeets are double-moulting birds, songsters, and in every respect differ greatly from the *Muscicapæ*, or Flycatchers: they are also much more lively in their manners. The ground colour of No. 2 of the eggs of the Grey Flycatcher should have been greenish.

Lanius collurio, or Flusher Shrike. These are among the most variable eggs we know, and Mr. Hewitson has accordingly furnished us with three figures of them, all very correct and characteristic.

At the same time, the varieties are not sufficiently illustrated in the plate, and we have many that are quite dissimilar from either of those represented. They vary greatly in size, and also in shape, from nearly spherical to an extremely elongated form. Very commonly, the zone of spots is at the smaller end; and we have specimens from two different nests which could not be distinguished from some of those of the Robin. Not long ago, the writer was much amused at seeing, in a gentleman's cabinet, diverse specimens of the egg of this bird labelled as those of the *L. excubitor*, *collurio*, and *rufus*! Two of the last-named species, the only specimens ever known to have been found in this country, and kindly lent to us by their possessor, considerably resemble No. 1 of Mr. Hewitson's plate of those of *L. collurio*, but are whiter, more free from dots, excepting at the zone, (which in the one is nearer the middle than in the other), where the spots are very close, and of two colours, greenish-brown and ash colour. There is little doubt but that they are equally subject to variation. Since writing this, we perceive that Mr. Hewitson has subsequently figured the eggs of this species.

Eggs of the Song Thrush, Black Thrush, and Missel Thrush; one of the first, two of the second, and one of the third. That of the first, of course, no one could mistake; but we think the specks upon it are decidedly too smudgy. The Black Thrush's eggs vary a good deal, both in size and markings, and are of every shade from nearly white to almost as blue as some of those of the Song Thrush. We possess one or two that could hardly be told from some varieties of those of the Missel Thrush: at least one more variety of them might have been added. The Missel Thrush's egg is the least characteristic of any we have hitherto met with, though we certainly have specimens very like it; it should be considered as a variety, rather than as a typical representation, and at least two more eggs of this species should have been figured.

Next, we are presented with good examples of those of the Fieldfare Thrush and of the Ring Thrush, two of each. They greatly resemble those of the Black Thrush, and, as Mr. Hewitson observes, "figures 1 and 3 may apply alike to all," the former being the most usual appearance of the Fieldfare's egg, the latter a variety of that of the Ring Thrush; they are blueish, minutely dotted with reddish-brown. Figures 2 and 4 are also a good deal alike in general character, the spots being distinct and larger, and little confluent. The author remarks, "I have never known the eggs of the Blackbird assume the markings of Nos. 2 and 4, this being

the only specific difference between the eggs of the three species." A Redwing's egg, which we have seen, is also very similar to many of those of the Blackbird. Of the Fieldfare Thrush, we are supplied with the following very interesting information. "We had, during a long ramble through those almost impassable [Norwegian] woods, met with many nests of a previous summer, which we supposed must have been once tenanted by the birds of which we were in search; and after having climbed many a tree to no purpose, were returning home disappointed, when our attention was attracted by the harsh cries of several birds, which we at first supposed must be Shrikes, but which afterwards proved to be Fieldfares anxiously watching over their newly established dwellings. We were soon delighted by the discovery of several of their nests, and were surprised to find them (so contrary to the habits of other species of this genus with which we are acquainted) breeding in society. Their nests were at various heights from the ground, from four to thirty or forty feet or upwards, mixed with old ones of the preceding year; they were, for the most part, placed against the trunk of the Spruce Fir, some were, however, at a considerable distance from it, upon the upper surface, and towards the smaller end of the thicker branches: they resemble most nearly those of the Ring Thrush; the outside is composed of sticks, and coarse grass and weeds gathered wet, matted together with a small quantity of clay, and lined with a thick bed of fine dry grass. None of them yet contained more than three eggs, although we afterwards found that five was more commonly the number than four, and that even six was very frequent. * * * The Fieldfare is the most abundant bird in Norway, and is generally diffused over that [northern] part which we visited; building, as above noticed, in society, two hundred nests or more being frequently within a very small space." We may be thought, perhaps, unreasonable, in not being satisfied with all this novel information; but still we cannot help wishing that Mr. Hewitson had completed his discovery, by bringing over a few of the eggs, and setting them under Blackbirds or other Thrushes at home, by which means he would have been enabled to describe their nestling plumage, which is still unknown. As it is, he is deserving of many thanks from ornithologists.

A whole plate devoted to one egg of the European Dipper; semi-translucent white, whence, unblown, they appear of a delicate bluish colour. We are surprised to observe Mr. Hewitson designate this species Water Crow! "I once surprised a nest of young *Water Crows*, which, although they could scarcely fly, instantly

took to the water, down the stream of which they were hurried with such rapidity that I supposed it impossible that any of them could weather it ; they did so, however, and landed safely far below."

Another plate, with but one beautiful egg of the Golden Oriole, a species which has not hitherto been known to breed in Britain. This egg is a good deal like that of the Song Thrush, only the markings are on a white ground. There are, also, a few delicate spots of a pinkish hue.

Eggs of the three British species of *Saxicola*, two of those of the Whin Chat, (*S. rubetra*). The latter have been erroneously considered, by most authors, as invariably spotless ; our observation agrees with that of Mr. Hewitson. All four are beautifully represented.

Figures of those of the Nightingale and Robin—two of each. Of the former, one is of the characteristic dull green, and spotless ; the other obscurely dotted with rufous brown. In our collection, one of these spotted specimens is much more thickly besprinkled at the large end, where the specks become confluent, till at the extremity it appears of a uniform brown. Nightingale's eggs vary much in size. The spots are rarely so large as in Mr. Hewitson's figure. The Robin's eggs are not *typically* represented ; many in our cabinet are very dissimilar ; not unfrequently they are almost white.

The next plate exhibits the Fen Reedling's, Sedge Reedling's, and Locustelle's eggs, one of each. The first is not a bad average example, though rather dark ; in general, the light ground colour is much clearer. This bird much more commonly nidificates in tall shrubs, than is generally supposed, even where reeds are plentiful in the close vicinity. The Sedge Reedling's egg we do not so much approve of,—at least to judge from our own extensive series, wherein there is not one resembling it. Undoubtedly it is a difficult egg to represent correctly ; its colours should be rather more blended : however, it could not be well mistaken for that of any other British species. The Locustelle's egg, we doubt not, has been executed with very great care, and is scrupulously correct. We long imagined that a specimen was in our possession, and were not a little pleased to find it exactly accord with Mr. Hewitson's figure, minus, however, the one little dash of black, which is unimportant. A few irregular black streaks are very prevalent in the eggs of all these birds, which may be easily washed off by simply wetting them. The same applies to many of the darker markings on the eggs of birds ; always unless there is a thin covering of shell over

them: try the experiment, for instance, with those of a Lapwing. This curious species, the Locustelle, approaches, in many ways, to the Pipits and other ground birds, insomuch that the earlier naturalists styled it a Lark; its hind claw is considerably elongated, and there is little doubt that its mode of progression is, as in the Pipits, ambulatory, notwithstanding that the contrary has been asserted. To ascertain this, we have long and patiently watched the birds, but hitherto without success. Like the Pipits, too, it would seem to nidificate upon the ground. Its singular note is sometimes uttered on the wing. The species is by no means uncommon on the heaths around London.

In the next plate we have four representations; two eggs of the Garden Fauvet, one of the Blackcap, and one of the Whitebreasted species. None of these are what we consider to be characteristic: there are now before us a great number of specimens of all three, which exhibit very considerable diversity. Of course it is not meant to be insinuated that Mr. Hewitson's figures are not correctly copied from his specimens, but they certainly are not average examples. Figs. 1 and 3 (the latter meant to represent the Blackcap's) approximate to the ordinary aspect of the Garden Fauvet's egg, only the markings should have a longitudinal tendency. Generally speaking, the Garden Fauvet's egg exhibits confluent spots of pale cinereous, and dirty brown, upon a dull white ground, having rather what may be called a *smear*y appearance. The brown is very rarely so dark as it is here represented. Fig. 2 is a peculiar variety, dissimilar from any we have ever met with. We have some in which the ground colour is very clear, with the spots distinctly marked, and chiefly at the large end, where they incline to form a zone; in short, very like an average egg of *F. garrula*. In another the spots are small and reddish brown, without any ash-colour markings. The Blackcap's eggs are commonly of a richer tint, which, however, varies greatly; an average specimen has much more brown in it than Mr. Hewitson's figure. The lighter markings generally blend with the ground tint, and there are mostly a few scattered dark spots. We possess them of every shade, from pale flesh colour to very deep reddish flesh colour, and to dark sienna brown; the ground tint being very seldom clear. We have specimens of the Whitebreasted Fauvet's eggs shewing considerable diversity, but not equal to those of the preceding; the ground colour is always clear, as remarked by Hewitson, and the markings are chiefly confined to the large end, appearing in some as minute dots, in others as ill-defined blotches. The figure is rather that

of a variety ; and altogether we should by no means select this plate as a favourable example of the work.

Mr. Hewitson describes the variation to which the above eggs are subject, and very judiciously observes that "there is so very close and admirable an approximation between the nests and eggs of these three birds, that any one, without having seen the birds themselves, would, without hesitation, place them together in the same genus." In like manner, we may add, is the propriety of generically separating the Pied and Grey Flycatchers of authors distinctly indicated by the diversity of their nests and eggs. "Shewing how very necessary it is," continues our author, "in the classification of birds, to pay some attention to their nests and eggs, and how very much knowledge, and pleasing and convincing proof and assistance, might be gained by so doing."

The following plate presents two eggs of the Golden-crowned Kinglet, and one of the Common Wren : both are exquisitely represented. Those of the Kinglet may be said to exemplify the extremes of variation ; but we should liked to have seen also a third, exhibiting its more ordinary aspect. Judging from the great number we have at different times seen, and the collection at present before us, we should say that the usual appearance of the egg of this species is dull white and spotless, but with a brownish tinge at the large end ; or the spots may be said to be only just distinguishable on very close inspection. We have one, a yolkless specimen, about one third the ordinary size, and have heard of others resembling it. Not long ago, we saw an egg of the Fiery-crowned Kinglet, which closely resembles that of *R. auricapillus*, save in being a trifle longer ; it was not, however, a British specimen. The Common Wren's is a very beautiful egg, pure white, with often hardly a speck discoverable ; generally, however, there are numerous minute dots at the large end. We observed a Wren this season, sitting on seven eggs, which were very darkly spotted ; but, as they were on the point of hatching, a specimen was not obtained. They greatly resembled, except in size, and in being more thickly spotted at the large end, Mr. Hewitson's fig. 1 of that of the Great Tit.

We have next four figures of eggs ; two of the Great Tit, one of its congener, the Cole Tit, and one of the Bearded Pinnock, still absurdly classed, by many writers, in *Parus*, the impropriety of which is sufficiently shewn even in the egg, and particularly in its diverse nidification. The figures of the Great Tit's egg are characteristic ; we have some much less distinctly marked, and others more so, than either, but, *tout ensemble*, are very well satisfied with.

the representation before us, more especially with No. 2, which we can match exactly. Our Cole Tit's eggs, upon which the parent was captured, are of a longer form than Mr. Hewitson's figure, with the spots less round; but, as we have not an extensive series, have no reason to believe the representation to be inaccurate. That of the Bearded Pinnock, of which we have seen many, is very good.

Eggs of the Blue Tit, Marsh Tit, and Rose Muffin, occupy the next plate; and the two former are as well represented as is possible with such variable subjects. Our series of those of the Blue Tit graduate from the most minutely dotted examples, more so than in the plate, to those in which the spots are very bold and large, and few in number: the latter variety is not figured by Mr. Hewitson. Those of the Marsh Tit vary similarly, but are seldom very minutely speckled. The Muffin's eggs are rarely so spotted as in the figure; many are pure white, with just a tinge of brown at the large end. Before they are blown, all the last mentioned eggs have a delicate blush appearance.

Next we have an egg of the Shore Pipit, and two of the Common or Meadow Pipit; the former somewhat darker than our specimens, which have the pale ground colour very distinct. All three are excellent illustrations. We have many varieties of those of the Common Pipit, and can match both Mr. Hewitson's figures exactly. No. 3 is by no means a common variety, and not a little indicates the affinity of these birds for the Wagtails.

The following plate exhibits single specimens of the eggs of the Pied and Grey Wagtails, and of the Golden Willet (*Budytes flavissima*). We cannot panegyryze the first as a typical example, the Pied Wagtail's eggs being commonly somewhat more spotted, and many very thickly marked, and sparrow-like; still we have some extremely like it. The eggs of this species differ chiefly from many of those of the House Sparrow in the spots being smaller. The Grey Wagtail's egg agrees tolerably with the few we have seen, and that of the Golden Willet is very fair. As Mr. Hewitson remarks, the eggs of both the latter species often assume the aspect of each other.

We now open upon figures of two rare ones; one of the Gird Bunting, which, however, is by no means a scarce species in many scattered isolated localities in the southern counties; the other, of the Common Snowfleck (*Plectrophanes nivalis*), about which we are incompetent to offer an opinion, further than that we have no doubt it is most carefully represented. It is not unlike some of those of the Green Finch. We have never yet met with a Gird

Bunting's egg in which the markings were bold and distinct ; and that figured by Mr. Hewitson accords with our observation. It is quite sufficient to glance at that of the Common Snowfleck to confirm the propriety of the bird's separation from *Emberiza*. We have for some years kept a specimen in captivity, and certainly can see but little similitude in it to the Buntings.

It is with pleasure we gaze next on a tolerably well filled out plate, containing six illustrations of the eggs of *Emberiza* ; two of the Corn Bunting, two of the Yellow Bunting, and two of the Reed Bunting. The first and last are admirable, and indeed those of the Yellow Bunting are very good, but we should like to have seen one of those beautiful and boldly dashed specimens of the latter : fig. 3 is not a common variety. We have a yolkless specimen less than an ordinary egg of the Golden-crowned Kinglet. Reed Bunting's eggs vary a good deal in size ; we have examples both considerably larger and much smaller than Mr. Hewitson's figures : one of the former is curiously marked longitudinally. We very much admire this plate.

Two figures of *Passer domesticus* and two of *P. arboreus* occupy the next, both of which are endlessly variable. We could have supposed the latter had been drawn from specimens now before us, so minutely exact is the resemblance. As to the Common Sparrow's egg, a dozen figures would hardly suffice to shew its variation, many examples of it being indeed very beautiful. This is an excellent plate. Does not the immature plumage of the Tree Sparrow resemble that of the female of *P. domesticus* ?

Two eggs of the Green Finch, and two of the Common Chaffinch ; all accurate in the extreme, but the latter hardly sufficiently diverse. We have several, from different nests, pure blue and spotless, others with only a mark or two ; some as dark as ordinary specimens of the Reed Bunting's eggs, others very like a Green Finch's ; some almost spherical, and others, again, extremely elongated : besides which are endless modifications of the colours and markings. One, if not both, of the Green Finch's eggs should have been tinged with green. We have a beautiful specimen of the Chaffinch's nest lined with large white goose's feathers ; a circumstance of very unusual occurrence.

In the next plate we have two eggs of the Song Linnet, one of the Mountain Linnet, and one of the little Rose Linnet, or Redpole ; all, so far as we have seen, very characteristic, though at least one of those of the Song Linnet should have been rather of a more blueish tinge.

Of the Haw Finch's egg we have next two exquisite representations, and one of the Bullfinch, which we do not so much approve of. It is certainly too large for an average specimen, and not blue enough: however, there are many like it. We have repeatedly met with the Haw Finch's nest in Kent and Surrey, but generally with young ones, which have yellow heads and throats, and are very prettily spotted on the under parts. For some time after they quit the nest they are very clamorous, and utter continually a shrill short note, resembling *kisp kisp*, or *kusp*. They are easily reared in confinement, and grow up extremely tame.

One egg of the Starling fills out (or rather does not fill out) a whole plate. It is a good exemplification of the average. We have one specimen of a much richer and deeper blue.

Two excellent representations of the Raven's egg now delight us—as characteristic as they could well be. We have seen some, however, widely different.

Three eggs of the Common Crow; all very good, but two of them not quite so diverse as we could wish. They are very commonly of a finer tint than any here represented, and are more boldly spotted with black; but their variations are literally endless.

Another capital plate, shewing three Rook's eggs. We do not think that better examples could have been chosen.

Two eggs of the Jackdaw, also very excellent, but a third might with advantage have been introduced; at least we have several that are very unlike either.

With the two representations of the Magpie's eggs we are not quite so well satisfied, or rather a third, an average example, is also wanted. There should have been one with the spots larger and bolder.

Two figures of Nuthatch's eggs, and one of the Treecreeper. Our specimens of the former are more elliptical. Some Treecreeper's eggs are very like the one figured, but generally the dots are smaller, and more exclusively at the large end.

Here we have two Cuckoo's eggs, selected, we are told from several specimens. No. 1 is very dark, No. 2 a remarkably pale example. Generally speaking, we think, they are much more rufous. The author observes, "I should have been exceedingly gratified could I have settled two very interesting points, which yet remain undetermined, viz.—what number of eggs the Cuckoo lays in one season, and whether or not it ever carries its egg (after having laid it) to the nest of another bird." From all we have observed, we are inclined to dissent from the latter opinion; and have

clearly ascertained, respecting the former, that this singular bird lays from four to six eggs in the course of the spring and summer, but not on consecutive days, as in those birds which incubate their own, but a week, or even considerably more, intervening between their successive depositions. This fact is perfectly explicable by a reference to a peculiarity in the bird's anatomy, which the present is not a fitting occasion to treat of: for whatever purpose this was designed we as yet know not; but on it evidently depends its deviation from the ordinary mode of propagation. It is well known that the female Cuckoo is much in the habit of watching birds that are carrying building materials, during which time she has always an egg gradually maturing, which will not separate from the ovarium until, perhaps, such time as the nest is ready for its reception. Still she cannot retain her egg when once in the oviduct, as has been suggested, as is proved by her occasionally laying into a half-finished nest.

The two following plates exhibit figures of eggs of our four species of *Columba*, all spotless white, and differing only in size.

Two eggs of the Common Pheasant, a light one and a dark one, though by no means shewing the extremes of variation. We have them considerably darker. Those of white Pheasants are very much paler; and we believe that the Ring-necked variety (?) or blended species (?) produces in general lighter eggs than the common sort.

An example of the egg of the noble Capercailzie Grouse (*Tetrao urogallus*), now, alas! no longer a member of the indigenous British Fauna, if, indeed, we can as yet again lay claim to it as an introduced species. It is, in size, equal to that of a game hen, reddish-cream colour, interspersed all over with numerous rufous-brown specks of different sizes. Also that of the Black Grouse, (*T. tetrix*), so ludicrously made a distinct genus of by Swainson, who styles it *Lyrurus*, solely from a mere difference in the form of the tail. It differs only from that of the other in being rather smaller, with the specks less uniformly diffused and larger. As is remarked, the dots are seldom, however, so large as is represented.

We have next three of those adornments to cabinets of British eggs, those of the Red Ptarmigan, (*Lagopus Britannicus*); and beautifully represented they are. These eggs generally sell for a shilling a-piece in the London Markets, and present a great number of beautiful varieties.

Eggs of the Grey Partridge (*Perdix cinerea*), two in number—a light and a dark specimen. We have examples both lighter and a shade darker, and varying remarkably in size and form. One of

these, probably not impregnated, and very pointed at the smaller end, was picked up on a naked down, on a spot evidently not chosen for a nest.

Two of the Redfoot, (*Erythropus Gallicus*), or Red Partridge of ordinary parlance, occupy the next plate, and are well figured. Of these we have a numerous assortment, obtained in Leadenhall market, where these eggs may be procured every season in abundance. We have a specimen with bolder markings than in figure 1.

We then open upon three of the variable, beautiful eggs of the Common Quail, a species, by the way, not rare upon the Surrey hills. The young are at first covered with a black down. This is an admirable plate.

And lastly, we close our first volume with that of the great Bustard, somehow styled *Tarda*. This is a large, greenish, or rather dull-green egg, blotched and spotted with scattered markings of brown, varying in intensity, according as they are nearer the surface of the shell. The shape is rather long, and in size about equal to that of a Goose.

Our commentary on the succeeding volume shall be reserved for the next No. of *The Analyst*, as we are unwilling not to give it an equally full consideration, which space, on the present occasion, will not well permit. For the most part, we have throughout been noting, as though the book were before the reader, as it ought to be if he take the least interest in the subject. It is exactly what every ornithologist should possess; and we earnestly entreat those who have not the work, to procure a copy, were it only to offer every encouragement to its persevering author. Let them assist also, to the utmost extent of their ability, in affording him the means of figuring unusual varieties and the eggs of rare species; and we may hope, hereafter, to have a complete series of the eggs of British birds, such as no cabinet could ever rival, and which would reflect no inconsiderable light and assistance, in enabling us to judge of the mutual affinities of the members of this interesting department of our native *Fauna*.

B.

REMARKS ON DR. CALDWELL'S "THOUGHTS ON PHYSICAL EDUCATION."*

DR. CALDWELL'S *Thoughts on Physical Education*, were originally delivered in a discourse addressed to a convention of teachers, in Lexington, Kentucky, on the 6th and 7th days of November, 1833; and, in the following year, they were published in the form of a Treatise, which has been reprinted at Edinburgh, by an editor whose judicious and instructive Notes have greatly enhanced the author's Essay, both in usefulness and importance.

Education, in the abstract, is considered by Dr. Caldwell as a *scheme of action or training, by which any form of living matter may be improved and, by perseverance, reared to the highest perfection of which it is susceptible*. He uses the expression "*any form*," because the lower orders of living beings—vegetables not excepted—may be educated and improved as certainly as the higher, and on the same grounds. That this scheme may produce its desired effects, its principles and their applications must be conformable to the constitution of the race of beings for whose improvement it is intended. No one, therefore, is capable of devising and arranging a system of education for the amendment of the general condition of the human race, or even of comprehending and applying it skilfully, unless he be thoroughly acquainted with the human constitution. He that would rectify or improve a piece of machinery, must first understand its structure and principles: in like manner, he that would alter human nature for the better must know it *as it is*. Special education, designed for a given purpose, is a scheme of training in accordance with that purpose. General training does nothing more than improve general powers: special training fits for some definite and corresponding pursuit. By the human constitution, Dr. C. means the material portion of man, in its organized and vital capacity; this being the only part of him we are able to improve.

Dr. Caldwell's theory of education is universally admitted to be correct, as it respects several of the mental functions. Seeing, hearing, tasting, smelling, and feeling, as well as voluntary muscular motion, are as true operations of the mind as judging, reasoning,

* *Thoughts on Physical Education, and the true mode of Improving the Condition of Man; and on the Study of the Greek and Latin Languages*, by Charles Caldwell, M.D., Professor of the Institutes of Medicine and Clinical Practice in Transylvania University; with Notes by Robert Cox, and a recommendatory Preface by George Combe. 12mo. Edinburgh and London. 1836.

remembering, or calculating by numbers. Now the former are as susceptible of improvement as the latter; but, when improved, the result is never considered as consisting in any amendment of simple spirit, but of compound organized matter. For example, when vision is improved the amendment is uniformly referred to the eye, the optic nerve, and that portion of the brain which is immediately associated with them; they being the organs wherewith the mind sees, and without which it cannot see. The position is so plain that to state it simply is to prove it to a demonstration. With regard to the higher mental operations the same may be affirmed. In performing these, the mind works with the brain as its machinery, as certainly as it does with the eye in seeing, the ear in hearing, or the muscles in performing voluntary motion. By practice, man becomes more powerful and expert in reasoning and judging; but in this case the mind is not changed; no—the improvement is confined to the organ in the brain, with which the mind reasons and judges. For man to claim the power of operating immediately on spirit, and of amending or deteriorating it by any means he can employ, is an assumption perfectly gratuitous, and, in his opinion, the Doctor adds (too modestly) not a little extraordinary and arrogant. It is enough that man is able to change matter, and to control it to his purposes, by *material agents*. All the means used in teaching are material: when, therefore, we wish to improve mental operations, we have only to amend the organs which the mind employs in performing these operations. There is good reason to believe that spirit cannot be altered or modified by any thing short of the *Creative Will*, by which it was primarily brought into existence.

Dr. Caldwell divides education into three distinct branches—the physical, moral, and intellectual. Nothing is more certain, he says, than that the intellectual and the moral powers may be educated separately—the former being amended while the latter are not, and the converse. There is as real a difference between moral and intellectual education, as there is between these and physical education: but they are all three so intimately connected, that the improvement of any one of them may be made conducive to that of the rest. Nor can it be otherwise, except through mismanagement: moral action, intellectual action, and physical action, all have their sources and instruments in different parts of the human system: these parts are essentially connected by sympathy, and other ties more mechanical and obvious: wherefore, one or more of them being injured or benefited, the rest must necessarily be affected. Thus, for instance, the human body is a very complicated system. It con-

sists of many different organs, which are again made up of other organs, each performing its specific functions : but, instead of acting every one for itself alone, these organs act also for each other individually and collectively, and are united in a system by function and sympathy. The condition of one organ, therefore, whether sound or unsound, influences and modifies that of many others : if it be a principal organ, it influences the whole machine. There are three great sets of organs which, while they are intimately and indispensably connected with each other, they control all the rest and assimilate their condition in no small degree to their own. These are the chyle-making or digestive organs : the blood-making and blood-distributing organs, consisting of the lungs, the heart, and the blood-vessels ; and the brain, spinal cord and nerves, which are the organs of intellect and feeling, as well as the sources of voluntary motion. All the other organs are controlled by these three sets, and they produce this effect by mutually controlling themselves, by exercising such a reciprocal influence as to be all, at the same time, somewhat assimilated in condition. They are as necessary to each other as they are to the whole : when one of them is materially deranged in its action, the two others immediately suffer, and all the rest of the system is disordered in its turn. Hence, it is quite evident, that moral and intellectual education which consists in amending the condition of the brain, and physical education which is the improvement of the other parts of the body, are indispensable to the perfection of each other, and consequently to that of the whole system. Physical education is to the other two, what the root, and trunk, and branches of the tree are to its leaves, blossoms, and fruit : it is the essence and source of their existence : injure or improve it, and you produce on them a kindred effect : without a strict and judicious attention to it, man cannot attain to the perfection of his nature. If history and tradition be credited, the people of ancient Greece, as a nation, were, physically and intellectually, the most perfect of the human race ; and there is reason to believe that their unrivalled attention to physical education was highly influential in determining this result. If, then, instead of treating technically of moral, intellectual, and physical education, authors and teachers would speak more correctly of the education of the different portions of the body, each portion being trained according to its organization and character, their discourses would be more philosophical than they are, and also greatly more instructive.

Physical education, in its philosophy and practice, embraces every thing that, by bearing in any way on the human body, can injure

or benefit it in its health, vigour, and fitness for action. This is Dr. C.'s position; and, according to him, the first and most important element of physical education is to procure, for those to be educated, *a constitution of body originally sound*. For attaining this end, the soundness of parents is necessary; because it is a law of nature that constitutional qualities are hereditary and transmissible from parents to their progeny, in man and animals. That the descendants of a community, sound, and vigorous, and hardy, in mind and body, will be themselves a community of the same description, unless they are changed by adventitious causes, is a general rule to which neither does history contain, nor can observation adduce, a single exception. This principle is extensively and powerfully operative on the standing and welfare of the human race: it is the reason why children, born at different periods of the lives of their parents, and under the influence of different circumstances, especially different degrees of parental health and vigour, are often so unlike each other: and it is also the probable source of the very frequent strong resemblance of twins who receive the impress of the same parental condition. The first-born children of parents who marry when very young, are rarely equal, either in body or intellect, to those born afterwards, provided the parents continue healthy. Dr. C. explains this occurrence by stating that very young parents are immature and comparatively feeble in constitution; that their constitutional imperfection descends to their early offspring; but that, as years pass on, their being ripens and their strength increases; and that, as a natural effect of this, the constitutions of their children become ameliorated. During early life, the animal faculties and their organs predominate: parents, therefore, who marry at this period, communicate in a higher degree to their children the same unfortunate predominance which renders them less intellectual and moral, and more sensual—less capable, as well as less ambitious, of pre-eminence in knowledge and virtue, and more inclined to animal indulgences.

Dr. C. refers to history and observation for a confirmation of this doctrine, and to philosophy for its exposition. He advises, as a means toward the improvement of our race, the prohibition or abandonment of too early marriages: before the parties form a compact fraught with consequences so infinitely weighty, let the constitution of both be matured. They will then, he says, not only transmit to their progeny a better organization, but be themselves, from the knowledge and experience they have attained, better prepared to improve it by cultivation. Patriotism, philanthropy, and every

feeling of kindness to human nature, call for the prevention of such marriages. Similar objections may be justly urged against young women marrying men far advanced in years. It is rare for the descendants of old men to be distinguished for high endowments, either of body or of mind: age has impaired their constitutional qualities, which being transmitted to their children, the practice tends to deteriorate our race: wherefore, Dr. C. concludes, old men ought, in no case, to contract marriages likely to become fruitful. As respects persons seriously deformed, or in any way constitutionally enfeebled, particularly those who are predisposed to insanity, scrofula, pulmonary consumption, gout, or epilepsy; all such persons should conscientiously abstain from marriage. The union of such individuals cannot be defended on moral grounds, much less on that of public usefulness: it is selfish to an extent but little short of crime: its abandonment or prevention would tend, in a high degree, to promote the improvement of mankind.

Another source of human deterioration is a long series of family intermarriages. Be the *cause* what it may, Dr. C. affirms, both history and observation testify to the *fact*, that the descendants from marriages between parties related by consanguinity always degenerate: in time, they become both mentally and corporeally enfeebled. Another grand source of the degeneracy of human beings is the marriage of the indigent, who are destitute of a competent supply of wholesome food for themselves and their children. This is a fearful cause of deterioration. Reason assures us that a sound and powerful machine cannot be constructed out of damaged materials; and to this decision of reason experience unites its testimony. Stinted and unwholesome fare acts on mankind as it does on other forms of living matter; it injures organization, and checks its development. Both the vegetables of a barren soil and the animals nourished by them are feeble, and diminutive, and unsightly; so is man, when pinched and dispirited by poverty and its concomitants. Dr. C. regards the state of the mother's health during pregnancy as a cause which operates decidedly upon the constitution of her unborn infant; and, he observes, it is vain to allege, in opposition to this, that the children of delicate, enervated, and even sickly mothers, are sometimes healthy and robust: they would have been much more so had the health of their mothers been in a better condition. All this being certain, he adds that females, while in this state, cannot too carefully avoid every thing calculated to injure or alarm them. They should take much exercise in the open air, overcoming the feeling which induces them to practice an injurious

seclusion suggested by an excess of delicacy. Their food should be generous, nourishing, easy of digestion, and taken in quantities sufficient to invigorate the system, and to maintain all its functions in full vigour. Their minds ought to be kept in a state of cheerfulness and tranquillity; and, in a particular manner, they should be protected from the effects of frightful appearances, alarming accidents, and agitating and impassioned tales and narratives. The blighting operations of the "Reign of Terror" on the children born in Paris during that period, furnishes fearful evidence of the influence of the distracted and horrified condition of the mother over the system of her unborn infant. An unusual proportion of these children was still-born; a number equally uncommon died at an early age; and of those who attained adult life, very many were subject to epilepsy, madness, or some form of cerebral disease.

According to Dr. C.'s scheme, which is excellent, the sound nursery-education of children consists chiefly in the judicious management of diet, cleanliness, clothing, atmospherical temperature, respiration, muscular exercise, sleep, and the *animal* passions. He would not exclude every degree of moral instruction from children at a very early period; but since the organs of their moral faculties are then not only small but immature, and cannot be operated upon to much advantage, attempts to excite them powerfully might even do mischief. His precepts on these departments of physical education are beautifully practicable, and delightfully instructive. He contends that parents, especially mothers, whose responsibility to God and society for the conduct of their children is unspeakably weighty, have it in their power to do, for the morality of a country, ten thousand fold more than all the teachers of theology, literature, and science, and all the pastors of churches united. Habits of correct and efficient morality, with a fruitful love and pursuit of virtue, are the issue chiefly of practice and example under the parental roof. It is, therefore, his deliberate judgment that children ought not to be too soon dismissed from an education exclusively domestic. Many parents are over anxious that their young ones should have a knowledge of the alphabet, spelling, reading, geography, and other branches of school-learning, at a very early age: but this is worse than tempting them to walk too soon; because the organ likely to be injured by such exercises is much more important than the muscles and bones of the lower extremities: these exercises may then do irremediable mischief to the brain, which is as yet too immature and feeble to sustain fatigue. Until the seventh year of life, all the energies of the brain are necessary for its own

healthy development; and that of the other portions of the system : wherefore, they ought not to be diverted, by serious study, to any other purpose. In early infancy, indeed, as well as afterwards, exercise is essential to the health of the brain, but this should be the general and pleasurable exercise of observation and action ; it ought not to be the compulsory exercise of tasks. Early prodigies of mind rarely attain mature distinction ; because, in such instances, the brain was injured by premature exertion, and the general health impaired.

Dr. Caldwell is not an advocate for " Infant Schools ;" and it is his opinion that, unless they are conducted with great discretion, they cannot fail to " eventuate in mischief." Instead of confining infants to inaction in crowded school-rooms, with saddened looks, moist eyes, and aching heads, he would send them into gardens and lawns, groves and pleasure-grounds, where we should meet them breathing pure air, leaping, laughing, shouting, cropping flowers, pursuing butterflies, collecting and looking at curious and beautiful stones, shells, and insects, listening to the songs of birds, singing themselves, admiring the bright blue arch of the heavens, or gazing at the thickening folds of the thunder-cloud, and doing all other things fitted to promote health, develope and strengthen their frames, and prepare them for the graver business of after life ; and, instead of pale faces, flaccid flesh, and wasted bodies, we should find them with ruddy cheeks, firm muscles, and with full and well-formed limbs. Mr. Cox, the Doctor's intelligent and discriminating annotator, entertains very different views regarding infant schools and their practical advantages. With respect to the training of infants, he observes, we ought to look not only to what is desirable, but to what is practicable. Were gardens and lawns, groves and pleasure grounds, within the reach of the generality of young children residing in large and crowded cities, it might be said, with some shew of reason, that most of their time ought to be spent in such places. But the case being otherwise, the best substitute for them must be resorted to ; and that substitute, Mr. Cox feels convinced, is a rationally conducted infant school : he even holds such a school to be far superior to the open fields, as a place of habitual resort for children. He distinguishes the institutions of Owen and Wilderspin with his perfect approbation. In them, the chief attention is devoted to physical education : for this purpose, there is a large play-ground, to which the children are dismissed at short intervals ; and there they are found breathing wholesome air, leaping, laughing, and shouting, as much as Dr. Caldwell himself could

desire. Even within doors, bodily motion, singing, and shouting, are regularly practised; lessons form a very subordinate part of their employment; they do little else than exercise the brain in the salutary and pleasurable offices of observation and action. The consequence is, that the children thus trained in accordance with the laws of nature thrive and are happy, and, instead of loathing school, look forward with eagerness to the time of returning to it, and cry if detained at home. Attendance at such schools possesses a great superiority over roaming at large in the fields, in the rule which keeps the pupils always under the eye of their teacher, who trains them to moral habits, fixes moral maxims in their minds, and instantly checks and points out the impropriety of any selfish or vicious act. In this way the mind is made obedient to discipline and pliant to reason; a result which could not be easily obtained if the children were allowed to spend their time in fields, without efficient superintendence. The cultivation of the moral faculties is most important, and where there is an assemblage of children it can be effected only under the guidance of a well-qualified teacher. Moreover, it is a safe principle in education that whatever is productive of misery and, though rationally taught, requires to be forced upon young pupils, is at variance with the dictates of nature. The attention of children ought to be claimed to those subjects exclusively for which the mental faculties developed at their age are adapted; and the little beings ought never to be tormented with abstract studies which fall within the sphere of powers not unfolded till a later period of life.

Dr. Caldwell judiciously observes, that of the sets of organs of which the human body is composed, some are so predominant in their influence as to assimilate the condition of the rest to their own. They also exercise a powerful influence over one another: thus, if one of them be deranged, it deranges the others; and, if any one of them be healthy and vigorous, the soundness of the rest may be considered, on that account, as the more secure. In executing the task of physical education, therefore, it is essentially necessary so to watch and regulate them as to keep them unimpaired. "These predominating organs are, the skin; the digestive system, composed of the stomach, liver, pancreas, intestines, and lacteals; the blood-making and blood-circulating system, made up of the heart, blood-vessels, and lungs; and the nervous system, comprising the brain, spinal cord, and nerves. The muscular system is also important, not only in itself, but as contributing, by its functions, to the perfection of the other organs. As an aggregate, therefore, physical

education consists in the proper management of these several sets of organs : train them in the best manner, and to the highest pitch, and the individual has arrived at his greatest attainable perfection.

Having treated of the other influential organs, Dr. C. proceeds to make the physical education of the brain the subject of some most important remarks. Like all other parts of the animated system, he says, the brain is enlarged, invigorated, and rendered more dexterous in action, by suitable and well-regulated exercise ; and by this also it is improved, in every respect, as the organ of the mind. As is the case with other organs, the brain may be exhausted and injured by too much, and enfeebled by too little, action ; for it should never be forgotten or neglected as a practical truth, that as action strengthens and improves living matter, so inaction deteriorates and weakens it. This is one of the elementary principles by which physical education ought to be directed ; indeed, it constitutes its foundation.

According to Dr. C., the brain is not a simple, but a compound organ ; it is an aggregate of many smaller organs, distinct from each other, yet closely linked in their condition by sympathy : hence, the soundness of one of them aids in giving soundness to the rest, and the converse. Being the instruments of separate mental faculties, these organs are destined to the performance of separate functions, no one of them being able to perform any other function than its own ; as the eye sees but cannot hear, and the ear hears, but can neither taste nor smell. As these organs, which unite in making up the cerebral mass, execute different descriptions of work, so can they work at different times, some of them being active while others are at rest ; and in this they resemble the external senses, for the ear may be impressed with sound while the eyes are closed, and the sense of smell may be active while that of touch is dormant. Moreover, like those of the external senses, the cerebral organs are excited to action by different objects and kinds of impression : thus, the eye is acted upon by light alone, the ear by sound, and the organs of smell, taste, and touch, by odorous, sapid, and tangible matter. In like manner, one cerebral organ is acted upon and exercised by attachment, another by resentment, another by justice, another by benevolence, another by the religious sentiment, another by music, another by colours, another by objects and events, and so on ; while each organ can be acted on and exercised only by things whereof the perception constitutes its exclusive and appropriate function.

Dr. C. represents the human brain as consisting of three com-

partments, which include the organs of the animal, the moral, and the intellectual faculties ; and, he observes, to raise the mental character to the highest perfection, each of those organs which are instruments of the mind must be large, well-organized, and healthy, and a correct balance must subsist between them. Inasmuch as the mind's organic instruments are perfect, in so much will the mental operations be proper and excellent : with bad or imperfect instruments, the hand of Praxiteles could not have earned for the artist the well-merited meed of immortality. In expatiating further on the brain and its physical education, Dr. C. indulges in some speculations not unaffected with the exclusive perceptions of enthusiasm. "To a solid," he says, "and infallible foundation for strength and activity of intellect, sound morality, and energy of character, nothing else (besides a large, well-organized, healthy, and right-proportioned brain) is necessary. Skilful 'training, by turning to the proper account these high gifts of nature, and in that way ingrafting improvement on capacity, will finish the work." This is the eloquent Doctor's very limited view of the work which is "to raise the mental character to the highest perfection." Man, 'tis true, can "work" on the brain ; but this, at best, is merely the mind's instrument, alike imperfect and perishable : he knows nothing whatever of the mind's essence ; and of the precise modes whereby it operates through the brain, as its organ, he is altogether ignorant. Far otherwise, however, is it with the All-mighty and All-wise Being who created the mind, and knows perfectly the elements of its constitution, and the extent of its powers : He alone can "work" on the mind as mind ; and that He does "work" on the immortal mind of man by divine and spiritual influences, is a fact whereof the probability is deducible from the manifestations of His essential attributes, and the actuality of which is demonstrable by the experience of devout and intelligent persons. Dr. C. continues his observations, and says "Were the whole human race thus happily tempered, the condition of man would be as perfect as it could be rendered, and the state of society correspondingly prosperous : talent and knowledge would prevail and be respected, morality and active virtue would predominate over profligacy and vice, and that every one should be happy in himself and useful to others, would be the ambition and earnest endeavour of all : and, he adds, this would be a millenium brought into existence by means of education, and in conformity to the constitution of human nature ; and let that state of improved brain occur when it may, the perfect organization of man, more especially of his brain, will constitute its basis. Here

the doctor takes a necessary precaution not to be misunderstood in making this assertion; and, in an especial manner, he disclaims all intention of offering by it any irreverence toward the Christian religion. He might have added, with a view to prevent misconception, that as in this world the mind and brain are correlative and coefficient, so the former, which may be reckoned a self-expansive essence, is inherently and necessarily prone to approximate perfection in activity and power, to the utmost degree whereof its organs in the brain are, by nature or education, qualified to be the mere physical instruments. We should not say that a large and energetic brain *makes* the mind comprehensive and vigorous: it would be better to conclude that the mind is ever able to use rightly the best brain wherewith it may be placed in a state of coexistence. As the work of an artist is affected by the quality of his instruments, so are the mind's operations affected by the quality of the cerebral instruments wherewith the mind performs its operations. The Doctor's meaning is, that whatever agency, divine or human, may bring about in man the change productive of a millennial condition, that change will consist in an improved organization—an organization made perfect by influence *from above*, or by education, perfect in its principles and suitably administered. Come, however, the amending power from what quarter it may—and before men can be fit members of a millennial state—they must have the fine organization of John, the beloved disciple, rather than that of Judas, which rendered him no less unsightly than treacherous. In the mean time, he concludes, it is our duty, both as moralists and christians, to make, by human means, as near an approach as practicable to millennial perfection; and an approach of great value to our race can be made by a well-concerted and well-administered scheme of education.

Dr. Caldwell next proposes, answers, and illustrates the question, Can the organs of the brain be *increased in size*, as well as rendered more adroit and vigorous in action by any process of training? His answer is,—Yes, with as much certainty as the muscles of the extremities can be increased in size, provided the process be commenced in childhood. On this principle depends the perfectibility of man; he means the susceptibility of the highest improvement compatible with the laws imposed on the human nature. As regards augmentation and diminution, power and weakness, the brain is governed by the same laws which regulate other portions of organic matter. Dr. C., however, does not say that it can be increased in bulk, by exercise, as much as muscles; but that it can be increased as

certainly, is his distinct opinion. He advocates, also, the important physiological principle, that, other things being equal, in proportion to the size of a compartment of the brain, is its proneness to action and the gratification which that action bestows on the individual. Thus, when the animal compartment predominates in size, the desire for animal indulgences is keen, the pleasure derived from them is intense, and the danger of lawless devotion to them is great. When the moral compartment surpasses the rest in size, a wish to comply with moral obligations constitutes the ruling passion of the person whose brain is thus organized, and his chief delight is to do his duty; to him every act of well-doing is its own reward: he follows virtue even for virtue's sake. Again, when a person has the intellectual department of the brain exceeding the rest in size, he is devoted to inquiry, if not to study: he delights in knowledge, deems it a valuable possession, and devises, as well as practices some mode of attaining it; and the kind of knowledge most agreeable to him is determined by the intellectual faculties and their organs which, in his brain, are most developed.

These views of Dr. C.'s are held forth by him as important and encouraging, as they relate to education and the improvement it produces: they point out a plain and easy process by which the condition of man may be ameliorated. Hence, he states, if the moral and intellectual compartments of the brain, in a child, be small, they may be enlarged by training; and, in proportion to their comparative increase of growth, will the young one's taste for knowledge and virtue concomitantly increase. By maturity in years, this taste will be confirmed; and, in organization (as the mind's instrument) and its effects, the amended condition of the adult will surpass not a little the promise of the child. By the law of inheritance, the children of this individual, resembling himself in his mature condition, will be better organized than he was in his childhood. Train them, says Dr. C., and their descendants as he was trained, until in time the highest perfection of their nature shall be attained: extend this treatment to the whole human race, and universal improvement in organization will be the issue: then will be completed, on grounds that cannot be shaken, the triumph of the intellectual and moral over the animal character of man.

To the question, In what way is the moral compartment of the brain to be cultivated, strengthened, and enlarged? the Doctor replies—by all sorts of moral excitement; inculcating moral precepts; presenting moral examples; eliciting moral sentiments; associating much with companions strictly moral; and by engaging early in the

moral practice of doing good. Reading the biographies of men remarkable for high and practical morality, and well-written works of moral fiction, contributes materially to the same end. This course, he affirms, when skilfully and inflexibly pursued, will infallibly strengthen and enlarge the moral organs, and confirm the persons subjected to its influence in habits of virtue. He represents the perfect physical education of the brain as consisting in the competent exercise of every part of it, so that each of its organs may possess due strength and activity and be itself healthy, and that there may exist between them the equilibrium necessary to the health and regulated action of the whole. If one or more organs or parts of the brain be exercised too much, they may become exhausted and debilitated, or excited to inflammation or a condition bordering on it, and not less truly morbid; while other parts, being exercised too little, or not at all, will be enfeebled by inaction; and thus must the health, not only of the brain, but of the whole system, suffer: for the brain being one of the ruling viscera of the animal economy, any derangement of it must injure the condition of all the others. He adds the position that the cerebral organs are liable to become exhausted or inflamed, according to their character: when small, phlegmatic, and feeble, they are easily prostrated by severe exercise; when large, high-toned, and vigorous, intense exercise inflames them, or produces in them such irritability and inordinate action as to derange the balance of the brain, induce mental irregularities, and lay the foundations of cerebral disease. This view of the subject shews the propriety and advantage of pupils pursuing several studies or modes of mental exercise at the same time, instead of being confined exclusively to one. It suggests, moreover, the reason of it; for by changing from one study to another successively in the same day, those who are cultivating science and letters not only learn much more than they could under confinement to a single study, but do so with less exhaustion and danger to health. By closely studying one branch of knowledge, in other words, by labouring all day with one cerebral organ, it becomes exhausted and dull; and, when thus worn out by toil, it is not merely unfit to continue its exercise with due effect, and to master its task, but its health is endangered, if not actually injured. On the contrary, when the pupil feels himself becoming unfit for one study and passes to another, he engages in the latter with fresh and active organs, and makes rapid progress in it until, beginning to be again fatigued and dull, he changes to a third, or returns to that which he had relinquished, and finds the exhausted organs re-

invigorated by rest. A pupil should never be urged to an excessive exercise of feeble cerebral organs, it being both useless and dangerous. It is useless because he can in no way become respectable himself, or render high services to others, with such organs; and it is dangerous, because it may impair his intellect and destroy his health. For the same reason, a youth should neither be encouraged nor permitted to persevere to excess in the exercise of highly sensitive and vigorous organs: such practice would be like exposing an irritable or an inflamed eye to a glare of light, or assailing a phrenetic brain with piercing sounds. By a strict observance of these precepts in seats of education, it is Dr. C.'s opinion that much time might be saved which is now wasted, much evil prevented, and much good accomplished. The necessity of their enforcement is strengthened by the fact that children and youth of precocious and large developments, with unusually active and vigorous talents, generally possess delicate and sometimes feeble constitutions: their systems are, therefore, the more easily deranged, and should be guarded with the greatest care.

Dr. Caldwell's philosophy, and his practical instructions on the all-important subject of "Physical Education," are but very partially developed in the preceding selections, which aim at little beyond the offering of inducements to investigate his doctrines, and to apply them in the nursery, the school-room, and the wide theatre of social life, in its manifold and complicated relations. His principles and views are well-illustrated in many places, and improved in others, by the apposite and perspicuous notes engrafted upon his work by its British editor; and in this extended form the volume merits a high degree of consideration from every person—parent or teacher—who is intrusted with the corporeal or mental superintendence of the young and the inexperienced.

J. K.

THE REPTILES AND AMPHIBIA OF BRITAIN, SYSTEMATICALLY ARRANGED.

A SYSTEMATIC arrangement of the British *Aves* and *Mammifera* having already appeared in the *Analyst*,* it occurred to me that a similar Catalogue of the remaining three Classes of British *Vertebrata* might prove acceptable to the zoological student. If the attempt be approved of, I may, probably, be induced to follow it up by catalogues of the British animals belonging to one or more of the Invertebrate Classes, particularly the *Testaceous Mollusca*, and the *Zoophytes*.

I cannot, perhaps, adduce more strong and unanswerable arguments for the distribution of the *Amphibia* into a distinct Class, than those which Dhéré has brought forward, on the authority of Blainville, in support and vindication of this view of the subject. I shall, therefore, take the liberty of almost literally transcribing the paragraph in which those arguments are exposed:—"In separating the *Amphibia* from the Reptiles, we follow," says Dhéré, "the classification of M. de Blainville; who considers them as a distinct Class, connecting the Reptiles with the Fishes. In fact, the skeleton, of a more mucous and less calcareous nature than that of Reptiles, the articulation of the head by two condyles, the naked and viscous condition of the skin, the absence of claws and of ribs, or the existence of the latter in a merely rudimentary form, the respiration at first branchial and afterwards pulmonary, the defect of an *organe excitateur* in the male, and fecundation without copulation, the peculiar envelope of the ova, and the metamorphoses which the animals in question exhibit in their progress from the ovum to the adult state, constitute characters sufficiently numerous and important to justify this separation; and, moreover, to prove that the *Amphibia* can never conform to the generalities exhibited by the Reptiles."†

In the construction of this Catalogue, I shall rely, with some few exceptions which my own observation and experience may seem to justify, on the works of Fleming and Jenyns, with respect to the Reptiles and *Amphibia*, and of Yarrell, as regards the Fishes. Nor is it my intention to attempt, in imitation of my very able and enterprising predecessor, any sweeping plans of reform in the arrange-

* See vol. iii., page 197; and vol. iv., page 67.

† Dhéré, *De la Nutrition dans la Série des Animaux*, page 57.

ment and nomenclature of the animals which constitute the subjects of my list. Reforms in science, like those in the constitution and government of empires, can only be efficient and salutary when emanating from an enlightened and profoundly experienced spirit, and conducted with an extraordinarily cautious and temperate hand. The writer, to whom I have just adverted, has, both in his Catalogue of British Birds and *Mammalia*, advanced many steps which he will find it, after all, necessary to retrace; and neglected almost as many others which might have been taken with equal safety and advantage. Much more knowledge, again, has been acquired, respecting the first two than the three inferior Classes of Vertebrated Animals, in their distinctive characters and habits. Influenced by these various considerations, and warned by the failure of my predecessors in the difficult path of zoological reform, I shall content myself with following the track marked out by Jenyns and Yarrell; and reserve, for a season of greater leisure and more deliberate reflection, the exposition of my views upon the subject of a reform of the nomenclature of British Fishes.

CLASS III.—REPTILES.

ORDER I.—CHELONIAN.

TURTLE FAMILY,—(CHELONIADÆ).

	<i>Turtle</i> , (<i>Sphargis</i> , <i>Merr.</i>)
Coriaceous Turtle	<i>Sphargis coriacea</i> (<i>Gray</i>).
	<i>Turtle</i> , (<i>Chelonia</i> , <i>Brongn.</i>)
Imbricated Turtle	<i>Chelonia imbricata</i> (<i>Gray</i>).

ORDER II.—SAURIAN.

LIZARD FAMILY,—(LACERTIDÆ).

	<i>Lizard</i> , (<i>Lacerta</i> , <i>Cuv.</i>)
Sand Lizard	<i>Lacerta stirpium</i> (<i>Daud.</i>)
Common Lizard	<i>Lacerta agilis</i> (<i>Berkeh.</i>)
Green Lizard	<i>Lacerta viridis</i> (<i>Daud.</i>)

ORDER III.—OPHIDIAN.

BLIND-WORM FAMILY,—(ANGUIDÆ).

	<i>Blind-worm</i> , (<i>Anguis</i> , <i>Cuv.</i>)
Blind-worm	<i>Anguis fragilis</i> (<i>Linn.</i>)

SNAKE FAMILY,—(SERPENTIDÆ).

Snake, (*Natrix*, *Flem.*)

Ringed Snake	<i>Natrix torquata</i> (<i>Ray</i>).
Dumfries Snake	<i>Natrix Dumfriensis</i> (<i>Flem.</i>)
	Viper, (<i>Vipera</i> , <i>Daud.</i>)
Common Viper	<i>Vipera communis</i> (<i>Leach</i>).

CLASS IV.—AMPHIBIANS.

ORDER I.—BATRACHIAN.

FROG FAMILY,—(RANIDÆ).

Frog, (*Rana*, *Laurent.*)

Common Frog	<i>Rana temporaria</i> (<i>Linn.</i>)
Edible Frog	<i>Rana esculenta</i> (<i>Linn.</i>)

Toad, (*Bufo*, *Laurent.*)

Common Toad	<i>Bufo vulgaris</i> (<i>Flem.</i>)
Natter-Jack	<i>Bufo calamita</i> (<i>Laurent.</i>)

NEWT FAMILY,—(TRITONIDÆ).

Eft or Newt, (*Triton*, *Laurent.*)

Warty Eft	<i>Triton palustris</i> (<i>Flem.</i>)
Common Eft	<i>Triton punctatus</i> (<i>Bonap.</i>)
Striped Eft	<i>Triton vittatus</i> (<i>Gray</i>).

Observations.—Among the evidences of design exhibited in the works of creation, there are none, in my opinion, more striking and conclusive than that which is displayed by the various animals of the Class, the members of which have just been enumerated. With the tadpole, or young of the Frog family, every common observer must be acquainted. It lives exclusively in the water; swims about after the manner, and exhibits many of the characters and all the habits, of the fish. For this purpose, it is provided with gills, instead of lungs, for its respiratory organ; with a tail, and a horny beak or muzzle. It is perfectly destitute of limbs; and the organs destined, at a subsequent period, to execute the office of lungs, exist merely in a rudimentary condition. It is, in fact, an aquatic animal, fitted only to live in water; and incapable of respiring the common atmosphere. No sooner, however, has it attained a certain age, than an extraordinary change of organization and economy, peculiarly fitting it for the new life on which it must now enter, is accomplished. The horny muzzle and tail are detached; the gills shrink, and are withdrawn; the previously dor-

mant and inactive lungs are gradually evolved, and come into play ; and the four limbs are developed. The aquatic is now transformed into a terrestrial animal,—adapted essentially for a terrestrial existence : for although the frog be an expert swimmer and diver, and is enabled, from the peculiarities of its respiratory function, to remain a considerable time beneath the water, still it must, of necessity, have frequent access to the atmospheric air ; and would shortly perish, like any other terrestrial animal, if submerged in that fluid, the presence of which was essential to its existence in the tadpole, or larva, state.

Here, then, we have not only an adaptation of peculiar organs to a peculiar state of existence ; but a perfect and most striking change in the adaptation of the former to the altered circumstances in the mode of life. There is assuredly nothing in the transformations of Lepidopterous Insects, astounding as those transformations really are, nothing more wonderful, or unanswerably demonstrative of design and providence in the works of creation, than this. I envy not the constitution, the feelings, or prospects, of that mind, which can contemplate the metamorphosis of the aquatic and fish-like tadpole into the air-respiring and reptile Frog, without a deep conviction that these are wonders which an Omniscient Spirit could alone have projected, which an Almighty Hand could only have achieved.

On these peculiarities in the structure and functions of the respiratory organs, the separation of the animals wherein they are exhibited, from the Reptiles, with which they have been until very lately confounded, principally rests. This peculiarity, however, the student will bear in mind, exists only in the early life,—or what may be called the larva state,—of our British *Amphibia*. Yet there are several exotic genera which, as the *Proteus* and the *Siren*, are permanently provided with both gills and lungs, and consequently capable of respiring, with equal facility and effect, in water and in air. These are, rigorously speaking, the only real *Amphibia* ; as permanently and equally fitted for *both* an aquatic and terrestrial life.* The former, as possessing only *temporary gills*, are consequently arranged under the Sub-class, *Caducibranchia* ; and the *Proteus* and *Siren*, as *permanently* provided with *these breathing organs*, under the *Perennibranchia*,† of modern *Amphibiologists*.

* Ἀμφί, on all sides, βίος, life.

† From compounds of the Latin *Caducus*, deciduous, and *Perennis*, permanent, with the substantive, *Branchia*, gills.

: The Newts, formerly arranged among the Lizards, which, in their exterior appearance, they so strikingly resemble, have, at length, been found to exhibit the same peculiarities in the economy of the respiratory process, as the various members of the Frog family: in early age, their respiration is branchial, or performed by gills; in the adult, pulmonary, or executed by lungs.* They have, consequently, been formed into a distinct genus, under the designation of *Triton*, and removed from the Saurian Order of the Reptile Class, to the Batrachian of the *Amphibia*. This presents a striking illustration of the influence of anatomical and physiological knowledge upon the progress and perfection of zoological arrangements. The Efts, or Newts, it should, however, be observed, do not, like the various species of *Ranidæ*, lose their tail, in the adult state.

In the next number of *The Analyst*, I shall present a Systematic Arrangement of the British Fishes; with a few cursory remarks on the Anatomy, Economy, and Distribution of the Fish-Class.

P.

CORRESPONDENCE.

TO THE EDITOR OF "THE ANALYST."†

SIR,

I trust that a few cursory and general remarks made by me at Whitby, in Yorkshire, during the progress of the great solar eclipse on the 15th of May last, may not be uninteresting to your readers. Though I recorded the phases every ten minutes, I had not the requisite astronomical instruments to determine the data correctly, nor the means of comparison as to time. Numbers will no doubt supply ample and accurate data on these points.

It seemed doubtful whether the eclipse would be observed annu-

* "The young are produced from eggs, laid on aquatic plants, breathe at first by gills, and have two claspers under the throat, by which they can adhere to a leaf. When the feet become perfect, the gills and claspers are absorbed."—Fleming, *History of British Animals*, vol. i., page 157.

† This communication reached us at too late a period for insertion in our last number.—ED.

lar at Whitby; but that beautiful phenomenon was certainly witnessed there, though the period, calculating from the formation to the dissolution of the annulus, did not exceed one minute thirty seconds: it was accompanied by a tremulous or undulatory motion, and seemed as if the lines were interrupted, or appeared to break or dissolve into each other.

On the evening previous to the eclipse, the atmosphere exhibited considerable dryness, for a saline efflorescence had covered the entire surface of the pier like hoar frost.

Prior to the commencement of the phenomenon on the 15th May, I retreated from Whitby and took my station in a sequestered spot among the cliffs, that I might in solitude and silence contemplate, undisturbed, the glorious spectacle. In the shade at this spot at 1h. and 42' p. m. the thermometer indicated a temperature of 68° F.; it then fell gradually at the rate nearly of two degrees for every ten minutes. At the period of the formation of the annulus, and of course of that of greatest obscuration, the temperature had fallen to 53° F. From this moment it gradually rose, and the thermometer at the close of the eclipse stood at 60° F. It is stated that during the period of greatest obscuration in the total eclipse of 1724, the thermometer had fallen only 2°. Short says, in reference to the eclipse of 1748, that they experienced no perceptible sensation of cold during its progress; but M. Cassini de Thury, who accompanied the King of France to Compeigne to observe this eclipse, states the reverse, though the thermometer fell only 2°. (Reamur?) In the present case, I not only became sensible of the increased cold, but the grassy carpet of the ground around me felt perceptibly damp. In fact, the hygrometry of the atmosphere was considerably changed. At 2h. and 50' p. m. the flowers of the *ficaria ranunculoides* began to close, were soon afterwards followed by those of the *daisy*, and towards the termination of the eclipse all had sunk to rest, and the closure of their petals was complete; forming a beautiful illustration of the *somnus* of that great naturalist, the distinguished LINNEUS, as applied by him to the repose of plants. Several other flowers which enamelled the sod around me, were also more or less affected. A few flowers of the *daisy* and *ficaria ranunculoides*, which I had culled during the eclipse when their petals were closed, afterwards re-opened their flowers when put into water and exposed to the sunbeam.

I may be permitted to remark that shortly after the impact and the umbra had made its appearance on the solar disc, I observed a *faint light* on the left of the apex of the umbra; it *might* be a *de-*

ceptio visus, but a somewhat similar appearance was witnessed by the celebrated MacLaurin in 1737, immediately before the completion of the annulus, towards the middle of the moon's circumference, not yet in contact with the disc of the sun.

During the period of the eclipse, insect life was still and motionless; the birds of the air flew near the ground, and there was a peculiar solemnity in the silence which reigned around me—unbroken save by the song of the lark, which rose at intervals: even the "attic warbler" was mute, however, during the maximum obscuration. At the close of the eclipse numerous insects appeared, and the lark soared higher with its welcome note. The atmosphere had been almost free from clouds, but floating cumuli collected and condensed; and toward the close of the eclipse had rallied, as if in sympathy round the standard of the sun. The diminution of light was by no means so great as many had expected; no stars were visible—Venus, perhaps, might have been seen had not clouds at the time obscured her path. The light, during the greatest obscuration of the sun, was quite peculiar; nature assumed a lurid aspect, and the sea, too, had a different livery from its usual tone of colour. It was not a twilight hue,—it was "itself alone," such as I have seen in looking through a Claude Lorraine glass. The Prophet's language describes it—"The light was neither clear nor dark. It was not day nor night." During the solar eclipse of 1820, I was among the Serpentine rocks near Portsoy, Scotland, and the diminution of light on that occasion seemed greater than in the present instance.

My distance from the tide-gauge did not enable me to consult it during the eclipse; but the *usual* height of the tide would have had its maximum on the 15th ultimo at 3h. 43': it did not, however, begin perceptibly to recede until four o'clock p. m., if it did not rather continue to flow so long. A death-like silence seemed to pervade the great deep, but about the maximum obscuration of the sun, I heard a wave below me "utter its voice," and "dash hoarse along the shore."

A friend informed me, while at Horncastle, that the tulips and anemonies in his garden there, shut their flowers during the eclipse, his bees ceased to work, the Thrush carolled his vespers or "even song," and the poultry retired to roost. At Hull the maximum of temperature in sunshine was 86° F., and the maximum in shade 74° F. The minimum in sunshine during the eclipse was 64°5, and in the shade 64° F. At 3h. 27' p. m. the thermometer in sunshine was 1° 30' *lower*, there than in the shade: and a friend at Sheffield told me a similar phenomenon was observed in that town. I am inclin-

ed to think that this is entirely attributable to the difference of *contraction* in the base and stem of the instruments, from the variation in the rate of cooling ; that in the sun being more rapid in its transition than the other.

I remain, Sir, yours, &c.

J. MURRAY.

Hull, 22nd June, 1836.

TO THE EDITOR OF "THE ANALYST."

SIR,

During a voyage across the Atlantic in the New York Packet Ship, *Roscoe*—Captain Delano—our conversation one day happened to turn on "the non-permeability of glass by water," when the Captain very obligingly allowed me to copy the following notes from his log-book ; which notes I have great pleasure in forwarding to you, as they confirm the experiments made by Mr. Rudder, of which a description is given in the 13th number of *The Analyst*.

An experiment to ascertain the pressure of the sea, off the Isle of France, 8th May, 1826, ship *Florida* :—

1. A glass globe, bought for the purpose, was fastened to the lead-line and sunk by three leads to the depth of 280 fathoms.
2. On the same line, 18 fathoms above the globe, I put a small bottle with an air-tight glass stopper.
3. Forty fathoms above this, a stout glass bottle, with a good cork sealed and covered with three coats of linen dipped in hot pitch. Each coat was allowed to cool before the other was put on.
4. Thirty fathoms above this, another bottle was attached to the line, much stouter and corked and sealed like the first, with only one covering of cloth.
5. Forty fathoms above this was a small bottle filled with fresh water, well corked.
6. Thirty fathoms from this an empty bottle, corked tight and sealed, a sail-needle passed through the cork and projecting on both sides.

On hauling up the line

The empty bottle (No. 6) with the sail-needle was half full of water, and the cork and sealing as perfect as ever.

The cork of the second (No. 5) was loose and raised a little, and the fresh water a little brackish.

The third bottle (No. 4) which was sealed and covered with a single piece of sail cloth, came up with very little water in it, and the cork and cover of cloth pitched quite perfect.

The fourth bottle (No. 3) with the covers of linen, was broken, except the neck where the line was fast.

The fifth bottle (No. 2) which had a long glass stopper, was about half full of water.

The globe (No. 1) came up in all respects as it was sent down, with not one drop of water in it.

Time of experiment, one hour.

I remain, Sir, yours, &c.

H. T. M.

Chester, Sept. 12, 1836.

BIRMINGHAM SOCIETY OF ARTS.

EXHIBITION OF PAINTINGS BY THE OLD MASTERS.

WE have had several such truly magnificent collections of pictures by the old masters amassed within the walls of this institution, that we cannot but deem the opinion of some contemporary prints, that the present exhibition is superior to any of its predecessors, rather an unfair decision. We are apt to think most highly (in many instances) of that which we have seen most recently; and with such a gallery as this before our eyes, even *we* ourselves, perhaps, do less than justice to the gems of art which have gladdened us in former years. We will, therefore, avoid all opinion on this subject, prudently observing, with Mrs. Malaprop, that "comparisons are odorous;" and straightway proceed to employ the brief space to which a pressure of scientific matter limits us, in pointing out to our readers a few of our especial favourites in this truly splendid collection.

Portraits of a Lady and Child, by Vandyck, is, without any doubt, the loveliest portrait in the rooms; and we question if Britain contains its parallel. Every peculiar charm and perfection which characterise the paintings of this eminent master are here assembled; and over all is thrown a something more than painting, an indescribable effect which makes us think the history of the beings before us some half-remembered tale, and fancy strives to supply what memory has not to give. The figure of the lady, robed in black, is graceful and composed; no consciousness of the painter's eye being fixed upon her appears in her sweet, calm, and beautiful

face : sad, yet quietly proud, is the expression of her fine, yet somewhat care-touched features. Her eye gazes beyond the scene which other eyes discern ; her thoughts are wandering to other times and by-gone scenes, and, it may be, to scenes whose very happiness is sad to think upon, when memory alone remains. Her fair boy stands beside her, in all childhood's bloom and beauty, and seems as if trying to look graver than his wont, because his mother is sad. She clasps his little hand convulsively in hers, as if in all her reveries he formed a part. But we are losing the picture in the beings it pourtrays—and is not this the highest praise of art ? Is not the acknowledgment of excellence we thus unwittingly yield, of more worth than all the technicalities and criticism in the world ? The generality of professed artistical critics would tell us of the mellow colouring, pearly tints, combinations of primary, secondary, and tertiary shades, and heaven knows how much more learned mechanism. But they *cannot* enjoy a glorious work like ourselves ; when, fascinated by its reality, we thus become the slaves of its creator's genius. *We* shall consider this reality and romance by Vandyck *the gem* of the exhibition.

Christ contemplating the Cross, said to be by N. Poussin. We have an engraved portrait of that unhappy artist ; it is far from amiable in expression, though, being painted by himself, he might have played the flatterer. But we tremble to imagine the terrific frown that would have darkened his "visnomy" could he have seen the unco queer productions which posterity would take his name in vain to dignify. This is a most amusing caricature, and that is all we can say of it.

The Holy Family, bearing the name of Da Vinci, is enough to arouse his wronged spirit in a most unholy rage. And its companions in mendacity on the same wall, attributed to Vandyck, ought to be swept out of the rooms, as rubbish unworthy the presence of better things.

The two large *Sea Views*, by Vernet, are grand pictures ; true to the life, both in colour and effect. The hazy appearance of the distance, with the spectre-like vessels half-seen, half-lost ; the rocky shore, and brilliant foreground, combine to render these splendid works most true transcripts of the particular aspect of nature which they represent.

Diana Hunting, by Rubens, in the same room, has all the faults of this painter, and none of his beauties. We greatly doubt both its authenticity and the correctness of the title ; at any rate it is a very libellous portrait of the chaste, virgin goddess.

Vandyck's wondrous portrait of himself, in the same room with the above, is alike beautiful as a work of art, and interesting from its evident connection with an important event of his life. The rich and powerful colouring of the fine head, the spirited position, and general expression, rivet the gazer's eye on this superb portrait.

A lovely picture of Frances, Countess of Dartmouth, by Sir Joshua Reynolds, clad in the garb of olden times, next engages us ;

it is a sweet, unaffected, feminine, and graceful figure. From this we pass to *The Infant Christ*, by Murillo: a justly famed specimen of this great master, whose genuine pictures are truly beautiful, but rare. The happy, placid sleep of the chief figure is exquisitely expressed; and nothing can exceed the softness and natural delicacy of the colouring. The whole picture has a charming air of quiet repose.

Several fine portraits by Sir Joshua Reynolds grace the various rooms; among our chief favourites are *Siacust Ukah*, a man of colour, painted with great force and brilliancy; and *Doctor Ash*, a large and very fine whole-length—a very characteristic picture of Reynolds's best style.

Of Sir Thomas Lawrence we have no favourable example. His pre-eminent excellence lay in his unapproachable delineation of female and infantine beauty; the grace, individuality, mind, and refined elegance with which he invested his fair and noble sitters, comprise his *chief* strength, great as he was in all his works. But portraits of royalty, such as the two full-lengths of the third and fourth Georges, are *not* the subjects in which to see Lawrence. They are fine and masterly works; but other hands might have achieved them. The *grand* he divided with brother artists—the *beautiful* was all his own.

From the glitter and glare of coronation robes and regimentals, we gladly turn to Wilson's half-divine landscape. Wait to see this picture until a sudden gleam of sunshine illumines its clear sky and aerial distance, so strongly, yet harmoniously relieved and heightened in effect by the dark masses of trees in the foreground. The bright lights which sometimes transiently rest upon the pictures have an almost magical effect on this superb landscape; they seem to change it from the perfection of painting to positive reality.

The large picture of *The Lucy Family*, by Jansen, is highly interesting, not alone as a work of art, but as a memorial of the costume of its era. The brief paragraph appended to the title, in the catalogue, is too amusing to be passed over in silence. It runs thus—"Portraits of Sir Thomas Lucy, knt., and his lady, Alice Spencer, with *three of their children, member of Parliament* for the county of Warwick in six several parliaments, and grandson of the Sir Thomas who prosecuted *Shakspeare*, and who built Charlecote House." How are we to understand this enigmatical announcement?—that "three of their children" were consolidated into one "member of Parliament?"—(most likely, for three Justice Shallows would go to one *man*, without bringing much head to the partnership). We next find this trinity considered as "grandson to the Sir Thomas who prosecuted *Shakspeare*, and who built Charlecote House!" both these performances being considered equally meritorious by his dutiful descendants! Verily and indeed, if this extraordinary paragraph be the composition of any of the Sir Thomas's "ancestors who have come after him," the family likeness remains marvellously strong. If it owe its existence to the compiler of the catalogue, we call on

the committee to "look to it." Instead of *three* children (the wondrous trinity in the unity of one member of parliament), we find in the picture, besides the knight and Lady Alice, three young ladies, with brocade gowns and Mechlin ruffs; one young gentleman, looking very tight in a new doublet, stepping out of the garden with a plate; another, younger, is placed beside his mamma, and apparently sitting upon nothing; two more juveniles are deposited in front of the group: while the youngest hope of the illustrious family appears in nurse's arms, in the background. We leave our readers to select for themselves, out of these eight sedate little people, the Member-of-Parliament-trinity. The individual portions of the picture are painted with minute and exquisite finish.

Rembrandt's *Tobit and the Angel*, though a work of great beauty as regards its execution in many parts, is so burlesqued in design and idea, that we can scarcely do justice to the manner in which it is depicted. Rembrandt's finest pictures are those the life-size; either portraits, or simple half-length groups; such as *The Standard Bearer*, *Eli and Samuel*, &c. In grouping scriptural figures smaller than life, he is too apt to degenerate into the coarse and absurd, especially where any angelic personages are introduced. The angel in the picture now before us is one of the most substantial, athletic figures imaginable; heavily clad in a thick, long garment, outside which he sports a pair of magnificent brown wings; and his proboscis is portentously red. Guido shews us a far better *Angel delivering St. Peter from Prison*; though this is inferior in beauty to the generality of celestial beings imagined by this graceful painter. His *Susanna and the Elders* is a fine picture. In the female figure his peculiar and delicate manner of delineating the flesh is well shewn.

We are compelled to pass slightly over many gems to which we would willingly devote individual notices: among these are Paul Potter's admirable animal portraits, Cuypp's sunny and delicious fields and half-living groups of cattle, several fine coast scenes by Vandervelde, landscapes by Rubens, Berchem—that prince of *truth*-painters; Sir Joshua Reynolds, &c.: but as we must condemn sundry court beauties by Sir Peter Lely to the same fate, we can scarcely be accused of partiality.

Gainsborough's portraits of Mr. and Mrs. Taylor, though good, only inelinate us to rejoice more heartily that he discovered his superior strength in landscape painting.

Vandyck's *Portrait of Prince Maurice* is a splendid picture. The present exhibition is most rich in his works; among them is his superb *Portrait of Sir Kenelm Digby*, whose fine intellectual head *lives* on the canvass. Nor is Waller's *Sacharissa* (the Countess of Sunderland,) one of the least interesting of the great master's bequests to posterity. The portrait painters of the present day would do well to qualify their studies of the brilliant and luxurious Lawrence by an equal attention to the chaste, quiet dignity, and calm unobtrusive grace of Vandyck. Sir Kenelm Digby and the fair mo-

ther and child in the inimitable picture we first noticed, are examples which cannot be too earnestly contemplated. Vandyck and Velasquez would be likely to inspire their students with a truer and purer feeling for the great, the refined, and the beautiful in art, than many of the more popular favourites.

Three very extraordinary pictures by Platza, in a miniature style, finished with great delicacy and beauty, occupied much of our attention. The first is *The Assumption of the Virgin*, containing a multitude of figures, representing all manner of unrepresentable things, but designed with infinite ingenuity, and drawn with great accuracy. The other two are classical subjects, apparently Bacchanalian festivals, most exquisitely arranged and executed; light and delicate in colour, yet possessing wonderful relief and richness. They are truly cabinet gems.

Tenier's *Alchymist* is another of the cabinet treasures. It is a most admirable example of this master's best manner, and, in subject, far preferable to his usual scenes of boors gaming, drinking, &c.

Vanderneer's *Skaters* absolutely seem skating on the canvas, the motion of the figures is so admirably conveyed. Rembrandt's *Hagar and Ishmael* escaped our notice when alluding to his other works in this collection. It is a beautiful picture, forcible, brilliant, and finely conceived; the figure of Abraham, with his hand laid on the boy's head, as if pronouncing the parting benediction, is of a superior character to Rembrandt's patriarchs generally. *The Brazen Serpent*, by Rubens, is a splendid historical composition, the figures smaller than life, but grandly and magnificently grouped.

One or two fine reliques of that almost superhuman genius Salvator Rosa add their wild and strange beauty to the exhibition, and sundry *would-be* Salvators and Claudes; but there are likewise some real gems of the glorious Italian's creation, making us bless the day he deserted the bakehouse for the studio. The game pieces of Snyders and Rubens are inferior to the productions of the same *firm* which we have seen here before. In the large picture of dead game, the pathetic and very sentimental expressions of the domestics introduced savours somewhat of the ludicrous. In so brief a survey as this, we must unavoidably omit even the mention of many pictures perhaps quite as worthy remark as those we have alluded to; but want of space must be our sincere apology. Farewell, gentle reader! pardon us for all omissions of works of *art*, for the sake of science and the Bristol meeting.

MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The sixth Anniversary Meeting of the British Association took place at Bristol on the 20th of August; and if the numerous valuable scientific papers read before the respective sections are a just criterion, this meeting may be considered the most important in its results of any which has been held since the formation of this society. On no former occasion has such a constellation of scientific men assembled to elicit great truths, and to promulgate new and momentous discoveries. The number of members enrolled was 818 from distant parts, and 568 inhabitants of Bristol; total, 1386. Amongst the most distinguished persons present were—The Duke of Beaufort, Marquis of Northampton, Earl Bathurst, Lord King, Lord Nugent, Lord Sandon, Lord Edward Somerset, Lord Cole, Lord Browne Mill, The Lord Bishop of Bath and Wells, Marquis de Spineto, Baron Dupin, The Rt. Hon. Spring Rice, Chancellor of the Exchequer, Rt. Hon. Henry Hobhouse, Hon. C. A. Harris, Capt. Sir John Ross, Sir Chas. Lemon, Sir Thos. Acland, Sir H. Strachey, Baronets; Sir David Brewster, Sir David Wilkie, Sir Peter Laurie, Sir Richard Phillips, T. G. B. Estcourt, M.P., T. Estcourt, M.P., J. J. Guest, M.P., R. B. Hale, M.P., G. A. Hamilton, M.P., H. Handley, M.P., Colonel Gore Langton, M.P., E. A. Sandford, M.P., P. J. Miles, M.P., W. Miles, M.P., T. Wise, M.P.; Professors Buckland, Daubeny, Rigaud, and Powell, (Oxford); Sedgwick, Whewell, Cumming, Henslow, Peacock and Challis, (Cambridge); Babbage, Baily, Christie, Cooke, Don, Phillips, Ritchie, Todd and Wheatstone, (London); Forbes, (Edinburgh); Johnston, (Durham); Barker, Evanson, Geoghegan, Sir W. R. Hamilton, Lloyd, McCaul and McCulloch, (Dublin); Stevelly, (Belfast, Ireland); Von Breda, (Leyden, Holland); Moll, (Utrecht); Parigot, (Brussels); Munier, (Geneva); Nilson, (Lund, Sweden); Von Raumer, (Berlin); Hare, (Philadelphia); Doctors Lloyd, (Provost of Dublin); Dalton, (Manchester); Lardner, Apjohn, Bliss, (Oxford); Bowring, Fiske, (America); Henry, Luppenburg, (Hamburg); Metcalf, (Kentucky); Davies Gilbert, Esq., Thos. Moore, Esq., the Very Rev. the Dean of Wells, the Rev. W. L. Bowles, Rev. W. D. Conybeare, &c. &c.

At the first meeting of the general committee, a letter was read by the secretary from the Marquis of Lansdowne, announcing his inability to preside, in consequence of the alarming illness of his eldest son, the Earl of Kerry.* An express was dispatched to the Marquis of Northampton one of the vice-presidents, who promptly attended to officiate for the noble Marquis. After effecting an alteration in one of the rules, limiting the number of vice-presidents to three, the meeting proceeded to the election of the officers and committees

* The death of this lamented nobleman took place on the following day.

for the different sections during the week. The following are the **GENERAL OFFICERS** announced for the occasion :—

Trustees—(permanent)—C. Babbage, Esq., F.R.S., R. J. Murchison, F.R.S., John Taylor, Esq., F.R.S.

President—The Most Noble the Marquis of Lansdowne.

Vice-Presidents—The Most Noble the Marquis of Northampton, F.R.S., Rev. W. D. Conybeare, F.R.S., James C. Prichard, M.D., F.R.S.

General Secretaries—Francis Baily, F.R.S., Rev. William V. Harcourt, F.R.S.

Assistant General Secretary—Professor Phillips, F.R.S.

Treasurer—John Taylor, F.R.S.

LOCAL OFFICERS.

Treasurer—George Bengough, Esq.

Secretaries—C. Daubney M.D., F.R.S., V. F. Hovendon, Esq.

We shall now proceed to give a brief analysis of the proceedings of the respective sections,* and we regret our limits restrict us from giving a more ample notice of several highly interesting subjects which came under consideration.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

President—Rev. W. Whewell.

Vice-Presidents—Sir D. Brewster, Sir W. R. Hamilton.

Secretaries—Professor Forbes, W. S. Harris, Esq., F. W. Jerrard, Esq.

Committee—C. Babbage, Esq., F.R.S., F. Baily, Esq., Professor James Challis, Professor Forbes, Robert W. Fox, Esq., William Friend, Esq., William Snow Harris, Esq., G. Jerrard, Esq., Rev. Dr. Lloyd, (Provost of Trinity College, Dublin), Professor Moll, Rev. G. Peacock, Professor Rigaud, John Robinson, Esq., Professor Stevelly, H. T. Talbot, Esq., Professor Wheatstone.

MONDAY.—At eleven o'clock the section met, when the president took the chair.

Mr. Lubbock read a paper of much interest, connected with the proceedings of nearly all the meetings of the Association, on the Investigation of Tides. The general inference was to confirm Bernouilli's theory of equilibrium.

Mr. Whewell read a report respecting the committee appointed to fix the relative level of the land and sea, with a view to determine its permanence. Another committee was formed—1. To strike level lines for considerable distances along the land; as, for example, from Bristol to Ilfracombe, and from Bristol to Lyme Regis, with great accuracy: the permanence of these two lines (independently of reference to the sea) would determine the permanence of the relative level of the points. 2. To refer the extremities of these lines to the sea at each extremity: the tides at the extremities being of any different amount, the observations would decide whe-

* The *Literary Gazette* and *Bristol Mirror* are the sources from which we have condensed our abstract.

ther a level line agrees with low water, mean water, or high water, and thus what is the true level of the sea.

A paper was then read, by Mr. Lubbock, on the importance of forming new empirical tables for finding the moon's place.

Mr. Phillips next proceeded to offer a brief statement of the means taken by the committee of the Association for the purpose of procuring regular and uniform experiments on subterranean temperature. The errors incidental to observations made in the air or water of mines had induced the committee to recommend observers to attend simply to the temperature of the rocks themselves; with this view thirty-six thermometers had been duly compared, and the errors of them ascertained. The results confirm the alleged increase of temperature beneath the surface. In one instance the instrument stood at seventy-eight degrees constantly, whilst the mean temperature of the air above was forty-seven degrees.

Mr. Craig read a paper on Polarization, with a view to shew that the phenomena are referable to the division, and consequently to the weakening, of the impulse of light; and the inability, therefore, to pass through other regular structures without exhibiting phenomena which arise out of the peculiarities of such structures.

TUESDAY.—Professor Whewell having taken the chair, Mr. Russell proceeded to read his paper on the practical applications of certain principles of hydrodynamics, which had been developed in the course of a series of experimental researches, in which he had been engaged for several years.

The investigations of Mr. Russell led to important results; and the present paper regards principles which open a wide field for the improvement of the construction and transport on canals, and of the navigation of shallow rivers.

The increased resistance of a fluid to a solid moving upon its surface, is well known, and has been supposed to follow the Newtonian law. This is sometimes true, although very rarely. It is scarcely ever true of a vessel moving in shallow water. For example, these are resistances, measured in pounds weight, required to move the same vessel at different velocities.

Velocities in Miles an Hour.	Resistance in Pounds.
4	39
6	91
7½	265
8½	215
9½	235
12	352
15	444

These apparent inconsistencies had been reconciled with theory by the discovery of a very beautiful phenomenon forming a most important element of the resistance. The law, connecting the resistance with the velocity of the propagation of waves in the fluid, gave to these results of experiment, unity and consistency. It had been ob-

served that the motion of a vessel through a fluid communicates to its particles motion in the form of waves. These waves are formed by the anterior accumulation of the fluid which the vessel pushes before it ; they propagate themselves in the same direction with the motion of the vessel, and with a velocity nearly uniform. Their form is determinate ; their length nearly constant, and their velocity nearly uniform. From the formation of these waves, the resistance is very different from the amount on the supposition of quiescence in the fluid.

The velocity of the wave is that acquired by falling through a space equal to half the depth of the fluid. In water about four inches deep, the velocity of the water is about three feet a second ; in a depth of seven inches, the velocity is about four feet a second ; at a depth of thirteen inches, the velocity of the wave is five feet a second ; at forty inches, ten feet a second ; and at sixty-six inches, more than eight miles an hour.

The resistance of the fluid was found, by a long train of experiments, to be intimately connected with the formation of the waves, in such a manner that the resistance was greater than in the ratio of the squares of the velocities, or less than in that ratio, according as the velocity of the wave was greater or less than that of the vessel. It was thus found that the generation of waves at the prow of the vessel impeded its velocity, so long as its motion was less rapid than that of the wave ; when, on the other hand, a sufficient power was obtained to make the vessel move faster than the waves, the heaping up of water at the prow ceased, the waves fell back towards the middle of the vessel, and, bearing it up upon their summits, carried it on with diminished immersion and resistance. From the law of the wave the following practical conclusions are to be drawn. 1. That in every canal there are two most serviceable rates ; one below the wave, up to about two-thirds of its velocity, and another immediately beyond the velocity of the wave. 2. That all velocities a little slower than that of the wave, are in some cases impossible, in others impracticable, and in all unprofitable. 3. That in shallow rivers and canals *depth* is an element of much greater importance than breadth. 4. That banks *nearly vertical* are, for all velocities, more economical of power, and more durable, than wide surfaces and long slopes. 5. That very high velocities are to be attained in shallow water with greater economy of power, by getting over the wave.

Professor Powell read Observations for determining the Refractive Indices for the Standard Rays of the Polar Spectrum in various Media ; a subject to which he has for years directed his attention.

Sir David Brewster read a paper on a singular development of polarising structure in the crystalline lens of the eyes of animals, after death. The inquiries which form the subject of this paper were made by comparing the changes which take place in the polarising structure of the crystalline lenses of animals in old age with those

after death, the lenses being placed in distilled water, as being the only fluid which did not affect the transparency of the cephali. From these investigations Sir D. Brewster has been led to conclude that there is in the crystalline lens a capability of being developed by the absorption of the aqueous humour, that a perfect structure is not produced until the animal frame is completely formed, and that when it begins to decay the lens changes its density and focal length, and sometimes degenerates into that state called hard and soft cataract. Sir D. Brewster is led to entertain a hope that these researches may furnish a means of preventing or curing this alarming disease.

The Rev. Mr. M'Gauley having been called on by the president to read a paper in continuation of the one which he gave last year, respecting the theory of the Application of Electro-Magnetism to Mechanical Purposes, commenced by stating that he had met with many practical difficulties, as might be expected, in preparing for the section a small model of a machine, intended to act with effective power; one of the most serious of these was, that the crank and fly-wheel could not be made to move along with the primary moving pendulum. He then proceeded to give his views of the theory of electro-magnetic influence, and the best modes of constructing the several parts of the apparatus, so as to produce the greatest effect, and illustrated the subject by copious extracts from a most laborious course of experiments, which it would appear that the reverend gentleman had himself instituted and conducted.

At the termination of the reading of this paper, which extended to great length, Professor Ritchie made some observations on its want of novelty; and stated that every part of the theory, and all the experiments had appeared in several of the most widely circulated scientific journals.*

WEDNESDAY.—The business was commenced by Mr. Harris, "On some Phenomena of Electrical Repulsion."

Professor Challis's Supplementary Report on the Mathematical Theory of Fluids gave an account of the application of mathematics to problems in the equilibrium and motion of fluids, which had not been touched upon in the author's previous reports. These were principally the mathematical theory of elastic fluids, as bearing on the determination of the heights of mountains by the barometer, the amount of astronomical refraction, and the theory of the determination of the velocity of sound as affected by the development of heat. The bases on which these theories rest were stated, and a comparison made of the theoretical results with experiments.

Mr. Adams made a communication on the Interference of Sound. He made some pleasing experiments with a tuning fork and a small glass tube, one end of which was closed. When the fork was held

* Mr. M'Gauley has published a letter in *The Athenæum*, complaining of this bitter and unfounded attack on his theory after he had quitted the room.

over the latter, the column of air within produced a sound, which increased or diminished according to the distance between them. With two tubes, one placed horizontally, the other perpendicularly, a curious phenomenon was observed: when the tuning fork was put in vibration in a certain position between the two unclosed ends of the tubes, no effect was observed; but when this position was changed, or the mouth of one of the tubes closed, a very audible sound was produced. With a tube of fourteen inches long, open at either end, tones were only obtained by stopping a small hole in the centre; but on inserting into this a glass tube of three inches in length, the effect was reversed, the sound being only heard when the glass was unclosed: upon increasing this small tube to seven inches, being half the length of the larger one, no sound was produced. Mr. Adams said he would not attempt to explain the cause of these phenomena, but leave it to Professor Wheatstone and other abler hands.

THURSDAY.—Mr. Peacock read a communication from Mr. Talbot on the Integral Calculus.

Dr. Apjohn then read a paper on the use of the Wet-bulb Thermometer in determining the specific heat of Air.

The Rev. Mr. Scoresby gave an account of two very delicate magnetic instruments. The first of these he called a magnetimeter, from its extreme delicacy in detecting and measuring exceedingly minute magnetic influences. The second instrument was a very powerful, yet very light, magnet, mounted in such a manner as to be eminently fitted for observing accurately the variation of the needle, as well as its diurnal and annual changes.

Professor Forbes, in a communication on the Terrestrial Magnetic Intensity at various heights, has gone far to determine an important but disputed question in Physics, viz. the change in magnetic intensity at different altitudes above the earth's surface. He stated, briefly, the results of forty-five series of observations with Causteen's intensity needles at 13 stations in the Alps and Pyrenees, from six to one thousand feet above the level of the sea, and compared with the intensities observed in the intermediate valleys. The general result at which he arrives is, that there is no general decisive indication of diminished intensity with height, at least within the limits of error of the instrument, and certainly, if it exists, the diminution must be considerably smaller than M. Kupper has supposed.

A paper, by Sir D. Brewster on the action or crystallized surfaces, was read, and gave rise to some discussion on the part of Sir W. Hamilton and Mr. McCulloch, but the statements of the paper do not admit of abridgment.

Dr. C. Williams gave an account of an improved ear-trumpet, by which sounds are rendered audible at three times the usual distance.

Evening Sitting.—Mr. G. Hall read a paper on the Connection of the Weather with the Tide, and observed that the barometer undulates at the changes of the moon, but more commonly sinks than

rises; the weather is then generally unsettled, with high winds; as the weather settles, it not unfrequently remains in an indeterminate state. These variations apply to all the changes of the moon.

Mr. Ettrick read three papers; the first on an instrument for observing Terrestrial Magnetism—on improved Rubbers for Electrical Machines—and on a new Instrument for trying the Effect of Electrical Discharges in Rarefied Air, or in different kinds of Gases.

Mr. Adams, in a paper on the vibration of bells, endeavoured to explain a peculiar beat frequently heard in the sound of a clock or tower bell, which he considers to arise from unequal thickness of the metal; this he illustrated by some striking experiments on a glass bell. An interesting conversation then took place, in which Professor Stevelly, Professor Forbes, and Mr. Adams took part.

FRIDAY.—The papers read this day were by Mr. Whewell, on a new Anomometer. In this communication Mr. W. explained a method of tracing or registering the course of the winds through a given period by the motion of a pencil, on an appropriate scale, so as to obtain eventually a true type of the winds, which has never yet been arrived at by other instruments.

Sir D. Brewster read a paper describing a contrivance by which he was enabled to render distinct the dark lines of the spectrum under the most unfavourable circumstances, and obtain other useful effects. The method was to introduce a cylindrical refractor between the eye and the eye-glass of the telescope, the effect being, as he shewed, to give a linear form to most irregular images.

Dr. Hare explained many interesting phenomena attendant on the electric spark and the divergence of electrified bodies.

Mr. Hodgkinson read an Account of some Experiments, at the request of the Association, to determine the comparative strength and other properties of Iron, made with the hot and cold blast, at the Carron, Devon, and Buffrey Works, under similar circumstances; the former he considered somewhat weaker, and its specific gravity somewhat less, except at the Devon Works.

SECTION B.—CHEMISTRY AND MINERALOGY.

President—Rev. Professor Cumning.

Vice-Presidents—Dr. Dalton, Dr. Henry.

Secretaries—Dr. Apjohn, Dr. C. Henry, W. Herapath, Esq.

Committee—Dr. Barker, Professor Daubeny, Rev. W. Vernon Harcourt, Professor Hare, Professor Johnston, Professor Miller, Richard Phillips, Esq., Drs. Roget, Turner, R. Thomson, F. Thompson, and Yellowley; W. West, C. Coathupe, G. Lowe, H. Watson, Esqrs., Col. Yorke, Rev. W. Whewell.

MONDAY.—The first paper read was on the Phosphate of Soda, and consisted merely of chemical details.

Mr. Ettrick produced and explained an improved blow-pipe, and Mr. Hare, of Philadelphia, a somewhat similar apparatus.

Mr. W. Herapath gave an Analysis of the Bath Waters, and fur-

nished the components. Some differences of opinion arose on the subject.

TUESDAY.—The first subject to which the chairman called the attention of the section was a paper by Mr. Thomas Exley, A.M., on rendering chemistry a mathematical science. The paper is entitled "Important Facts obtained mathematically from theory, embracing most of those Experimental Results in Chemistry which are considered as Ultimate Facts." Mr. Exley observed:—His object was to place chemistry under the domain of mathematical science, and to establish his new theory by legitimate but very easy calculations. The principles on which the whole theory rests are—

1. That every atom of matter consists of an indefinitely extended sphere of force, which varies inversely as the square of the distance from the centre; and that this force acts *towards* the centre, and is called *attraction* at all distances, except in a small concentric sphere, in which it acts *from* the centre, and is called *repulsion*.

2. That there is a difference in atoms, arising from a difference in their absolute forces, or the radii of their spheres of repulsion, or from both these.

Three classes of atoms were noticed—tenacious, electric, and etherial atoms. In respect of the attraction in the first principle, this theory agrees exactly with the theories of Newton and Bosovich, but after that, where chemistry and its connate sciences are concerned, they are unlike in every particular. It was shewn that the atomic weight of hydrogen being taken equal one, as the unit of comparison, that of oxygen should be sixteen, instead of eight, as used by the British chemists. One of the arguments was drawn from the analogous composition of sulphurous and carbonic acids, concerning which both sides are agreed, and steam and sulphuretted hydrogen, concerning which they differ.

1. Sulphurous acid is the sole gaseous product when sulphur is burnt in dry oxygen gas, and the resulting volume is the same as that of the oxygen consumed.

2. Carbonic acid is the sole gaseous product when carbon is burnt in oxygen gas, and the resulting volume is the same as that of the oxygen consumed.

3. Steam is the sole gaseous product when oxygen is burnt in hydrogen gas, and the resulting volume is the same as that of the hydrogen consumed.

4. Sulphuretted hydrogen is the sole gaseous product when sulphur is burnt in hydrogen gas, and the resulting volume is the same as that of the hydrogen consumed.

These exact analogies, with others, shew clearly that they agree in composition. But all parties allow that each of the first two contains three atoms; therefore we ought to conclude each of the others contains three atoms: therefore sixteen is the atomic weight of oxygen. Other equally cogent arguments were advanced. It was also shewn, by ten striking examples, that 12, the atomic weight of carbon, as determined by Dr. Thompson, is nearer the truth than 12.25, as given by Berzelius. The following propositions were demonstrated:—

1. When ethereal matter is contained in a vessel under pressure, a tenacious atom placed in it will acquire an atmospherule of ethereal matter, the stronger sorts will occupy the lower strata, and, if electric atoms be present, they will form the lowest stratum. When two tenacious atoms are present, they will condense ethereal matter in the line between them, and especially the stronger sorts, and the electric atoms will be brought into that line.

2. The mutual actions of the whole mass in the vessel is a repelling force between any two atoms varying inversely as their distance.

3. If the absolute force, or spheres of repulsion, of the tenacious atoms in the vessel be increased or diminished, the repelling force mentioned in proposition 2 is not altered. Here it was shewn that equal volumes of gases contain an equal number of atoms.

4. That the densities of gases vary as the compressing force.

5. That the volume varies as the temperature.

6. That the absolute force of a tenacious atom being given, there is a certain magnitude of its sphere of repulsion, at which it will retain a maximum quantity of electric atoms.

7. Elements combine chemically in definite proportions.

Many of the above propositions were stated as known facts, but here they were shewn to be necessary consequences from the two principles of the theory.

8. Taking each elementary atom as representative of a volume; then, in all strictly chemical combinations, that is, whenever there is any condensation, the resulting volume is always, without exception, either one or two volumes exactly, whatever may be the number of volumes which combine.

This law, it was observed, contains and extends the theory of volumes. After proving it from the theory, it was proved by induction, from fifty-seven compounds, all as far as known to him, whose specific gravities had been determined by experiment; and the calculated specific gravities in every case, except boro-choloric acid, agreed with those by experiment within the allowable errors in such cases. It was observed that these facts could not be explained on any of the received theories. The thanks of the section were voted to Mr. Exley by acclamation for this paper. Dr. Dalton expressed his approbation of this doctrine of volumes, and now saw reasons for their uniting which he had not before discovered. Mr. W. Herapath and Dr. Thompson (of Glasgow) spoke highly in praise of the theory, which they considered one of the greatest boons ever bestowed upon chemistry.

A paper on the power of certain gases, carbonic oxide, and olefant gas, to prevent the union of oxygen and hydrogen, by Dr. Henry, was next read. This *questio vexata* has perplexed the best chemists; and the author, after many experiments, concludes that the *interference* is only exercised by gases having an affinity to oxygen.

Mr. Herapath next read a paper on Arsenical Poisons, which he illustrated, by relating the circumstances of a memorable trial which recently took place at Bristol, and attracted great public attention, as one hardly equalled in the annals of criminal jurisprudence.—We regret our limits prevent our giving an abstract of this interesting Paper.

WEDNESDAY.—Professor Daubeny read his report on the present state of our knowledge with regard to Mineral Waters.

He first stated the ingredients that had been detected in atmospheric water, and in that of the sea and lakes; and then proceeded to detail the facts of recent observation noted with respect, first, to the temperature, secondly, the ingredients solid and gaseous, and thirdly, the medical properties of particular waters. He pointed out the source of these ingredients, explained in what manner certain thermal springs obtain the carbonate of soda with which they are impregnated, and the manner of the solution of the silica in water—stated the quantity of carbonic acid gas, of nitrogen, and of sulphuretted hydrogen, present in various springs; and referred to the manner in which the effect of snow water in producing goitre has been recently accounted for. He concluded by explaining the origin of the heat of springs, and of the gases they emit; attributing the former to certain chemical processes going on in the interior of the earth, by which oxygen is abstracted, and considering the nitrogen as the residuum of the atmospheric air, which had been deprived of its oxygen by the processes alluded to.

Mr. Mushet exhibited some specimens of Iron Ore, and explained the process by which iron is generally separated from its ore. He also exhibited a specimen of iron cement produced by himself, and which he stated possessed greater binding qualities than any other cement.

THURSDAY.—Dr. Dalton entered into an explanation of his system of Atomic Symbols, a printed Diagram of which was handed to the members of the section. The first part contained the form he had used for representing the primary or simple element; and the second, various combinations which sufficiently shewed the manner in which the principle proceeded.

Dr. Thompson read a detailed account of the experiments he had made on the combination of sulphuric acid and water. The Doctor first distributed tables of the results among the members of the section, without which, he said, the subject could not be understood. The object of the experiments were stated to be—1st. To ascertain the specific gravity of atomic mixtures of sulphuric acid and water; and 2nd. The specific heat of all those combinations. The thanks of the section were moved to Dr. Thompson for his valuable and original paper, which was warmly eulogized by Drs. Apjohn and Dalton, and Mr. Herapath.

Mr. W. C. Jones read a paper on a peculiar modification of gluten, and on a peculiar volatile fluid. He stated that the compounds he described were procured in an elaborate analysis of wheat. The result of the quantity of its relative ingredients was very different to that obtained by preceding chemists. The gluten, of which he produced a specimen, differed entirely from that obtained in the usual way, being perfectly soluble in alcohol and water, and also possessed other interesting properties. The peculiar volatile fluid was obtained from the distillation of the lignin of wheat with sul-

phuric acid, and appeared to be entirely unknown, opening, Mr. Jones observed, a wide field for investigation. He also proved that, contrary to all former analysis, the lignin of wheat contained nitrogen as one of its elements. He likewise shewed that starch could be immediately converted into sugar by sulphuric acid, and which would appear to be in opposition to the experiments of Saussure. In answer to a question by the chairman, Mr. Jones stated that wheat from the south of Europe contained more gluten than English wheat by two or three per cent.

FRIDAY.—The following papers were read:—Some Improvements on the Voltaic Battery—and Observations on Atmospheric Electricity, by Mr. Crosse. On a new Compound found during the destructive distillation of Wood, by Mr. Scanlaw. On a peculiar Compound of Carbon and Potassium—and On a new Gaseous Bicarburet of Hydrogen, by Professor E. Davey. On the Conducting Power of Iodine, by Dr. Inglis. On Fluorine, by Mr. Knox. On detecting the Strength of Spirits by diluting with Water, by Mr. Black. Communication on the Aurora Borealis, by Dr. Trail.

SECTION C.—GEOLOGY AND GEOGRAPHY.

President—Rev. Dr. Buckland.

Vice-Presidents—R. Griffith, Esq., G. B. Greenough, Esq.; (for Geography) R. J. Murchison, Esq.

Secretaries—W. Sanders, Esq., S. Stutchbury, Esq., T. J. Torrie, Esq.; (for Geography) F. Harrison Rankin, Esq.

Committee—H. T. De la Beche, Esq., M. Van Breda, J. Carne, Esq. Penzance, Major Clerke, Lord Cole, Rev. W. Conybeare, R. Griffith, Esq., Rev. W. Hopkins, Sir George Makenzie, M. Van der Melen, Professors Parigot, Phillips, and Sedgwick, the Marquis of Northampton, W. Smith, John Taylor, S. Worsley, E. Charlesworth, R. Hutton, R. Ibbotson, J. Macadam, Esqrs., Rev. T. T. Lewis.

MONDAY.—Mr. Charlesworth read a paper evincing much talent and geological labour, on “The vertebrated animals found in the crag of Norfolk and Suffolk.” The author first adverted to the probability of the tertiary deposits above the London clay in the eastern counties of England not belonging, as has been generally supposed, to one formation. He then proceeded to establish the fact of the remains of mammiferous animals being indiscriminately associated with marine testacea in a fossiliferous stratum which appears to extend from Cromer, in Norfolk, to within a few miles of Albro’, in Suffolk. The author had not detected any traces of mammalia in the coralline crag, or in that portion of the upper deposit which skirts the southern coast of Essex and Suffolk. The bones of land animals found in the crag have undergone the same peculiar chemical change as that exhibited by the teeth of fish, and which readily distinguish them from those belonging to the overlying diluvial strata. Teeth of the *Mastodon angustidens* have recently been found at Thorp and Bramerton (near Norwich), parishes adjoining

Witlingham, the spot in which the specimen figured by Dr. William Smith was said to have been obtained. The *Mastodon* appears to be the only mammiferous animal which became extinct during the crag epoch; all the others at present discovered in that formation being either identical with existing species or with those found in the more recent diluvial and lacustrine deposits. The author next proceeded to notice the remains of birds which he had recently procured from several localities in the crag district. These occur in a highly mineralized state, and consist principally of bones belonging to the extremities of natatorial tribes. The class of vertebrated animals whose remains are met with in the greatest abundance is that of fish. These, however, differ widely in their geological and geographical distribution. Such as are found in the stratum which contains the mammalia, consist principally of the hollow tubercles of various species of Rays, with prodigious numbers of very singular bones, which have externally very much the character of coprolites, but which are thought, by Agassiz, to belong to the genus *Platax*, or tropical fish. These bones are not met with in the crag of Essex and the southern part of Suffolk, but throughout that part of the formation the teeth of several genera of the Shark tribe occur in considerable abundance. Of these the most remarkable is the *Carcharias megalodon*, specimens of which are found as large as those brought from the tertiary beds of Malta. The remains of reptiles have not yet been discovered in the crag, which would rather support the opinion advanced by Dr. Beck and M. Deshayes, that, during the period of its formation, the climate resembled that of the arctic regions.

Mr. Murchison said he had come to a different conclusion as to the great pebble on which the town was supposed to stand. In Lyell's book, there were two little sections of that district, by which it was clearly made out that the chalk rose up from the stratum in immense masses. In conclusion, he begged to compliment Mr. Charlesworth on his interesting paper.

Mr. Bowman read some remarks on the Bone Cave of Cefn, in Denbighshire, accompanied by some specimens; these caves have been recently more extensively excavated. A section of the upper end of the great cave consists, first, of a series of nearly horizontal layers of impalpable adhesive loam of light and dark shades, in which micaceous particles and layers of a redder colour may be seen. No coprolites have been seen by Mr. Bowman, nor did he perceive any teeth-marks of carnivorous animals upon the bone; and he confirmed Mr. Stanley's opinion of a former lake, by citing the immense mass of primitive diluvium on the side of the valley, and suggested the importance of endeavouring to ascertain the height of its surface.

A conversation took place on the benefit which would be derived from the construction of accurate geological models, &c., of which specimens were shewn by Mr. Ibbotson.

TUESDAY.—The first paper read was on the classification of the Old Slate Rock of Devonshire, with an Explanation of the true position

of the Culm Deposits of the central portion of that County, by Professor Sedgwick, and R. J. Murchison, Esq. The latter observed he was about to submit a mere outline of a more detailed memoir on the physical structure of Devonshire, which, in conjunction with Mr. Sedgwick, he purposed to lay before the Geological Society of London. One object they had in view was, to remedy the defects in existing geological maps, as to colouring sub-divisions of formations: and another to ascertain, by actual sections, the true position of successive deposits, and their natural subdivisions, so as to bring them into comparison with other corresponding deposits, and to determine their true place in the succession of British formations. By help of a section, the following succession of deposits in the ascending order was determined:—

1. A system of slaty rocks, containing a vast abundance of organic remains, generally in the form of casts; these rocks sometimes pass into a fine glossy clay slate, with a true transverse cleavage—sometimes into a hard quartzitic flagstone, not unusually of a reddish tinge, sometimes into reddish sandstone, subordinate to which are bands of incoherent shale. In North Devon they are very seldom so calcareous as to be burnt for lime, but in South Devon rocks of the same age appear to be much more calcareous. This series is finely exposed in the Valley of Rocks and the Valley of the Lvn, but its base is no where visible in this line of section.

2. A series of rocks, characterized by great masses of a hard, thick-bedded, red sandstone and red flagstone, subordinate to which are bands of red, purple, and variegated shales; the red colour occasionally disappears, and the formation puts on the ordinary appearance of a coarse silicious grey wacke, subordinate to which are some bands of slate, but too imperfect to be used for roofing. This specimen contains very fine organic remains; it is several thousand feet in thickness, occupying the whole coast from the west end of the Valley of Rocks to Combmartin, being thrown back by a dip into the cliffs between Portlock Bay and Linton; it re-appears in North Hill and the Quantock Hills.

3. The calcareous slates of Combmartin and Ilfracombe, of very great aggregate thickness, abounding in organic remains, and containing, in a part of its range at least, nine distinct ribs of limestone, burnt for use. This limestone is prolonged into Somersetshire, and is apparently the equivalent of the limestone on the flank of the Quantock Hills.

4. A formation of lead-coloured roofing-slate, of great thickness, and occupying a well-defined zone in North Devon, its upper bed alternating with, and gradually passing into, a great deposit of green, grey and purple, or red sandstone, and micaceous flagstone. These silicious masses alternate with incoherent slates, and are in some places surmounted by great masses of red unctuous shale, which, when in a more solid form, generally exhibit a cleavage oblique to the stratification.

5. The silurian system, resting conformably on the preceding, of great thickness, on the western coast of North Devon, occupying a zone several miles wide, and containing many subordinate beds and masses of limestone. In its range towards the eastern part of the county it gradually thins off, but its characters are well preserved, and throughout it contains an incredible number of characteristic organic remains.

6. The carbonaceous system of Devonshire. This system is very greatly expanded, stretching in a direction E. and W. across the county, occupying the whole coast from the neighbourhood of Barnstaple to St. Gennis, in Cornwall, and on its southern boundary ranging so close to Dartmoor that its lower beds have been tilted up and mineralized by the action of the granite. This great formation is, therefore, deposited in a trough, the northern

border of which rests partly in a conformable position upon the silurian system, and partly upon older rocks, partly of the division No. 4. Its southern border rests on the slate rocks of Cornwall and Launceston, and on the north flank of Dartmoor. From one side to the other it exhibits an extraordinary succession of violent contortions, but its true place in the ascending section admits of no doubt whatever. In some places it is overlaid by patches of green sand, and in one part of the coast, west of Bideford, it is overlaid by the conglomerates of the new red sandstone, which are seen for half a mile resting unconformably on its edge. The lowest portion of this vast deposit is generally thin-bedded, sometimes composed of sandstone and slate, with impressions of plants—sometimes of indurated compact slate, both in an earthy and crystalline state. These beds are surmounted by alternations of shale and dark-coloured limestone, with a few fossils. Subordinate to these beds there are, on the west side of the county, many thin veins and flakes of culon and anthracite.

On the eastern side of the county the coal is wanting, and the calcareous beds are much more expanded. On the south side of the great trough, the calcareous bands and dark shales are well exhibited; but near Oakhampton are, as above stated, mineralized by the action of the granite. The higher beds of this deposit are well exhibited on the coast west of Bideford, and consist of innumerable alternations of ferruginous sandstone, flagstone, and shale, containing in several places concretions of ironstone, very often exhibiting impressions of plants; and one extended tract of country, containing at least three beds of culm or stone coal, associated with shales, contains many plants of species not known in the true coal measures. Though in a state of greater induration than the ordinary coal measures of England, and in most parts almost destitute of any trace of coal, yet even in these respects it differs not from a great unproductive tract of the coal field of Pembrokeshire. Therefore, from the order of super-position, from the mineral structure, from the absence of that slaty cleavage which characterizes the older rocks on which the deposit rests, and from the specific character of its organic remains, they had no hesitation in classing it with the *carboniferous* series.

Mr. De la Beche read a paper on the Connection of the Geological Phenomena of Cornwall and Devonshire with the Mineral Veins, and exhibited the splendid ordnance map of Cornwall on which its geological features are marked. The elvans, a vein of granitic character, had been thrust through the upper surface of the earth, through masses of greenstone, sometimes imbedding slate rocks; and it appeared that the metallic lodes had also been, in like manner, protruded through the superior formations. The same coincidence occurred in Blackdown; but the veins there were destitute of valuable materials; whereas, in Cornwall, they were filled with rich ores. From his premises, he was of opinion that the best veins of metal would be found near the granitic elvan, and in cross courses. In slate, no mining speculations were likely to repay those who wrought in that substance.

A discussion of much interest to mining and those who embark in it, was carried on for some time by Mr. Hopkins, Mr. Fox, Mr.

Taylor, Mr. Conybeare, and Mr. Sedgwick. Mr. Fox has for some time very successfully turned his attention to the formation of mineral lodes, or veins; and to the principle of electro-magnetism, as applied to these formations. It had been observed by Mr. Fox, and by others acquainted with the peculiar structure of the Cornish metalliferous deposits, that the same lode would sometimes contain copper pyrites; and within a short distance, and merely separated by the common argillaceous substances, sulphate of copper, or some other modification of the same material. Whenever this occurred, the lode was generally found to be saturated with water, containing various salts; a circumstance that seems to influence, in some degree, the change in the mineral deposit. Mr. Fox, applying the exercise of his strong and highly cultivated mind to these phenomena, immediately conceived the notion that electro-magnetism was the prime agent in the production of this extraordinary change. To prove this, he procured an earthen pan, which he divided into two compartments, by inserting in the centre a barrier of clay saturated with dilute sulphuric acid, and jammed down closely. In the one compartment he placed water, charged with the sulphate of copper; and in the other, dilute sulphuric acid. In the sulphuric acid he placed plates of zinc, connected by a rod and wire with a piece of copper pyrites, suspended in the water contained in the other compartment. In a short time electro-magnetic action commenced. The sulphur passed from the water through the barrier of clay to the zinc, and there not being sufficient sulphur in that water to form by this union sulphate of zinc, the copper pyrites was deprived of a portion of its sulphur, and changed to common gray copper! Mr. Fox thinks he shall be enabled to complete this experiment without the dilute sulphuric acid, and merely by water.

At the evening meeting, Professor Phillips gave an account of the distribution over the northern parts of England of Blocks or Boulders, which excited some interesting remarks from Professors Sedgwick, Buckland, and Murchison.

WEDNESDAY.—Mr. Stutchbury read a paper on some newly-discovered Saurian Remains, from the Magnesian Conglomerate of Durdham Down. This communication chiefly related to the specimens exhibited to the meeting, and contained a number of minute anatomical details, which testified the industry of Dr. Riley and Mr. Stutchbury, who had examined the specimens. These highly interesting organic remains were found in the magnesian conglomerate that rests upon the limestone, and they must have been deposited upon the spot where they were found without violent action, as they bear no marks of attrition; they are often injected with the rocky paste, which has been originally of a viscid character, from its containing blocks of limestone suspended, even near to the surface, and bones have been found near the bottom. The most interesting fact mentioned was the peculiar structure of the vertebræ of the newly-discovered saurians, which, from their deeply concave structure, presented a remarkable contrast to those of the

recent crocodiles. He shewed a singular gradation from the recent saurians to sauroid fishes, by means of this arrangement of vertebrae, which became an excellent guide in the discrimination of the genus of Saurus; and he concluded his communication with a quotation from Agassiz, respecting the progressive development of animal life.

A paper was read by Mr. Hopkins, containing theoretical views respecting the geological phenomena of elevation. The principal object of the author in this paper was to investigate the effects of an elevating force acting simultaneously at every point of portions of crusts of the globe, of considerable superficial extent; and he shewed that the theoretical inferences deduced from the hypothesis are in striking accordance with the phenomena he had observed in the limestone and coal districts of Derbyshire. He pointed out that in that district the directions of dislocation were not such as could result from the influence of the jointed structure of the rocks as the determining cause of those directions. He also shewed how the theory he had discussed will account for nearly all the phenomena of mineral veins which can be attributed to mechanical causes, as well as for the formation of systems of artificial lines, of faults, and of other phenomena of elevation.

THURSDAY.—Mr. Murchison having taken the chair, the Marquis Spinetta read a paper entitled "A report of the attempts made to ascertain the Latitude of the ancient City of Memphis." The details of this communication are of importance to geographers, as tending to elucidate a point on which Pocock, Shaw, Bruce, and others, have differed. The question may now be considered to be set at rest, it having been clearly ascertained that it was in the present bed of the Nile, in latitude $29^{\circ} 46'$ north, and longitude $31^{\circ} 30'$ east, from Greenwich. The chairman congratulated the section on having heard these satisfactory details, and observed that the same process which had buried the ancient city of Memphis in the bed of the Nile—an accumulation of mud and drifted Lybian sands, in consequence of the demolition of the dykes, which once turned aside the water—had already sunk the beautiful fossil beds of Purton beneath the Severn.

Mr. Murchison then quitted the chair and was succeeded by Dr. Buckland, who stated that he had received engravings, prepared under the direction of M. Agassiz, of some of the splendid fossils in the Bristol Institution; and he also placed upon the table a copy of his work on Geology, forming one of the Bridgewater Treatises.

The next paper was On the Change in the Chemical Character of Minerals, induced by Galvanism. Mr. Fox mentioned the fact, long known to miners, of metalliferous veins intersecting different rocks containing ore in some of these rocks, and being nearly barren or entirely so in others. This circumstance suggested the idea of some definite cause; and his experiments on the electrical magnetic condition of metalliferous veins, and also on the electric conditions of various ores to each other, seem to have supplied an answer, in-

asmuch as it was thus proved that electro-magnetism was in a state of great activity under the earth's surface, and that it was independent of mere local action between the plates of copper and the ore with which they were in contact, by the occasional substitution of plates of zinc for those of copper, producing no change in the direction of the voltaic currents. He also referred to other experiments, in which two different varieties of copper ore, with water taken from the same mine, as the only exciting fluid, produced considerable voltaic action. The various kinds of saline matter which he had detected in water taken from different mines, and also taken from parts of the same mine, seemed to indicate another probable source of electricity; for can it now be doubted, that rocks impregnated with or holding in their minute fissures different kinds of mineral waters, must be in different electrical conditions or relations to each other? A general conclusion is, that in these fissures metalliferous deposits will be determined according to their relative electrical conditions; and that the direction of those deposits must have been influenced by the direction of the magnetic meridian. Thus we find the metallic deposits in most parts of the world having a general tendency to an E. and W. or N. E. and S. W. bearing. Mr. Fox added that it was a curious fact, that on submitting the muriate of tin in solution to voltaic action, to the negative pole of the battery, and another to the positive, a portion of the tin was determined like the copper, the former in a metallic state, and the latter in that of an oxide, shewing a remarkable analogy to the relative position of tin and copper ore with respect to each other, as they are found in the mineral veins.

— Cross, Esq., of Broomfield, Somerset, then came forward, and stated that he came to Bristol to be a listener only, and with no idea he should be called upon to address a section. He was no geologist, and but little of a mineralogist; he had, however, devoted much of his time to electricity, and he had latterly been occupied in improvements in the voltaic power, by which he had succeeded in keeping it in full force for twelve months by water alone, rejecting acids entirely (cheers). Mr. C. then proceeded to state that he had obtained water from a finely chrystallized cave at Holway, and by the action of the voltaic battery had succeeded in producing from that water, in the course of ten days, numerous rhomboidal crystals, resembling those of the cave: in order to ascertain if light had any influence in the process, he tried it again in a dark cellar, and produced similar crystals in six days, with one-fourth of the voltaic power. He had repeated the experiments a hundred times, and always with the same results. He was fully convinced that it was possible to make even diamonds, and that at no distant period every kind of mineral would be formed by the ingenuity of man. By a variation of his experiments, he had obtained grey and blue carbonate of copper, phosphate of soda, and twenty or thirty other specimens. If any members of the Association would favour him with a visit at his house, they would be received with hospitality,

though in a wild and savage region on the Quantock Hills, and he should be proud to repeat his experiments in their presence. Mr. Cross sat down amidst long-continued cheering.

Professor Sedgwick said he had discovered in Mr. Cross a friend who, some years ago, kindly conducted him over the Quantock Hills on the way to Taunton. The residence of that gentleman was not, as he had described it, in a wild and savage region, but seated amidst the sublime and beautiful in nature. At that time he was engaged in carrying on the most gigantic experiments, attaching voltaic lines to the trees of the forest, and conducting through them streams of lightning as large as the mast of a seventy-four gun ship, and even turning them through his house with the dexterity of an able charioteer. Sincerely did he congratulate the section on what they had heard and witnessed that morning. The operations of electrical phenomena, instances of which had been detailed to them, proved that the whole world, even darkness itself, was steeped in everlasting light, the first-born of heaven. However Mr. Cross may have hitherto concealed himself, from this time forth he must stand before the world as public property. Professor Phillips said the wonderful discoveries of Mr. Cross and Mr. Fox would open a field of science in which ages might be employed in exploring and imitating the phenomena of nature.

The chairman then called on Mr. Conybeare to read his paper on the Coal-fields of Wales, but that gentleman said that the subject would now be so uninteresting after the splendid discoveries that had been detailed to them, that he should only point to the map, and request them to imagine that he had read his paper, and that they had been asleep all the while.

Mr. Murchison read a paper on the Geological Relations of certain Calcareous Rocks near Manchester, after which the section adjourned to the evening.

Evening Sitting.—Mr. Murchison made a communication respecting the ancient Hydrography of the River Severn, and entered into statements respecting the drifts, in the course of which he expressed an opinion that the River Severn had been thrown into a southern direction by a convulsion of nature. A long discussion bearing on this question then took place, in which Professors Griffith, Hare, Sedgwick, and Phillips, and Messrs. De la Beche, Murchison, Hopkins, and Fox, took part.

FRIDAY.—Lord Nugent read a communication respecting some sea rivulets in the island of Cephalonia. The water, he said, entered the earth through fissures on the sea-shore, and it was not discovered where they emerged, but were, however, said to flow into the sea on the side of the island nearest Ithaca.

Mr. Charlesworth read an elaborate paper on some fallacies involved in the results obtained respecting the relative age of tertiary deposits, from the application of the test recently introduced by Mr. Lyell and M. Deshayes. During the author's investigation of the fossiliferous beds above the London clay in Suffolk

and Norfolk, some facts have come under his observation which appear to him to point out sources of error to a considerable extent in the application of the test recently proposed by M. Deshayes and Mr. Lyell, and which is now so generally adopted in the classifications of tertiary formations. The crag has been referred by Mr. Lyell to his *older pliocene* period, on the authority of Deshayes, who identified among the fossil testacea of that deposit forty per cent. with existing species. The correctness of this result has been called in question by other eminent conchologists, particularly by Dr. Beck, of Copenhagen, who has examined the crag fossils in the author's collection, and considers that the whole of them are extinct. In this opinion Dr. Beck is supported by Mr. G. B. Sowerby, who states that he has only met with *two or three* crag shells which may perhaps be identified with existing species. Professor Agassiz has inspected an extensive series of ichthyological remains (collected from the crag, by the author), and pronounces them all to belong to extinct genera and species. While a precisely similar result has attended Dr. Milne Edwards's examination of the corals. Professor Phillips, in his *Introduction to Geology*, has placed the crag in the *miocene* division; while Dr. Flemming, who, for more than a quarter of a century, has been an indefatigable collector of British shells, considers that the proportion of recent species in the fossils of that formation has been rather under than overrated by Deshayes, and among the corals of the crag he has detected a large proportion of living forms. The particular one of Mr. Lyell's division to which a geologist will refer any given deposit must, therefore, depend upon his own estimate of the characters which constitute specific distinctions, and which is evidently liable to the greatest possible amount of variation. The author next entered upon an inquiry respecting the course which should be adopted in obtaining the relations of analogy presented by the fossils of different deposits to one another, or to the races in existence at the present period. The effect of the method now made use of is to class as contemporaneous those deposits which respectively furnish the same per centage of extinct forms, without the slightest reference to the greater or less degrees of approximation which such forms exhibit when compared with living types. Those conchologists who agree with Dr. Beck cannot, by means of the per centage test, express the difference in the amount of approximation presented by the testacea of the crag and London clay to those now existing, because they would consider all the fossils of both these formations extinct, and consequently refer them both to the *ecocene* division. Here the relations of analogy can only be obtained by a general estimate of the amount of resemblance borne to existing species by the entire series of crag and London clay fossils taken collectively. This modification of the principle introduced by Mr. Lyell, when applied to the fossils of those formations which, from the presence of living species, can also be subjected to the per centage test, will, under some circumstances, furnish results that clearly establish a fallacy in one

of the two methods. For instance, the red and coralline crag are supposed, by Deshayes, to contain the same number of extinct species, and by the per centage test they, therefore, present an equal approximation to the races now in existence; but if the shells which Deshayes thinks he can identify with those now inhabiting the German ocean are rejected, and the *extinct testacea alone* compared with living types, the forms most remote from existing species will be found to occur in that series which have been derived from the coralline crag. The author then changed his line of argument, and assuming that there is a general agreement among conchologists as to the characters which should be depended upon in discriminating species, and also that the per centage test is the true method of obtaining relations of analogy, he proceeded to inquire how far the association of organic remains in regularly stratified deposits implies their previous contemporaneous existence, and then pointed out the effect of causes now in operation upon the earth's surface, in reference to the erroneous conclusions which will be formed by future geologists, should they follow the same course of induction as that which has been pursued by Mr. Lyell. A long discussion followed, in which Dr. Buckland, the Marquis of Northampton, Professor Sedgwick, Mr. Greenough, and Mr. Murchison, took part.

SECTION D.—ZOOLOGY AND BOTANY.

President.—Professor Henslow.

Vice-Presidents.—Rev. F. W. Hope, Dr. I. Richardson, Professor Royle.

Secretaries.—John Curtis, Esq., Professor Don, Dr. Riley, S. Rootsey, Esq.

Committee.—C. Babington, Esq., J. E. Bowman, Esq., T. C. Eytton, Esq., Hon. Chas. Harris, Rev. Mr. Jenyns, T. Mackay, Esq., Rev. M. Phelps, Richard Taylor, Esq., Professor Wilson, William Yarrell, Esq., W. C. Hewitson, Professor Scouler, Dr. Jacob, Rev. Mr. Ellecombe, G. J. Jeffrys, Esq., R. M. Ball, Esq., Col. Sykes, J. L. Knapp, Esq., N. Vigors, Esq., E. Forster, Esq.

MONDAY.—Dr. Richardson commenced the proceedings of the section by reading the introductory portion of his report on North American Zoology, comprising remarks on the physical geography and climate of the country.

A living specimen of the *Aranea avicularia*, Linn., or *Mygale avicularia*, which is of the spider tribe, was exhibited by Mr. Rootsey, who made some observations on the subject.

Mr. Rootsey mentioned the result of various experiments he had made in extracting sugar, spirit, &c. from mangel wurzel, or *Beta macro rrhiza*, and converting the plant into malt, specimens of which were exhibited to the section. The sugar was obtained in strong crystals, and the refuse of the plant was dried on a malt kiln at a proper temperature, where it acquired the flavour and properties of common malt, and afforded an excellent beverage. The molasses were fermented into a spirit, the flavour of which was comparable to the peach brandy of America. Forty tons of the plant, which

were sometimes raised upon an acre of land, afforded 3 tons of malt and $3\frac{1}{2}$ tons of molasses. A specimen of the *Halitica nemorum*, or turnip-fly, was then exhibited by Mr. Rootsey, which he stated was the only insect which attacked the plant. Some discussion took place as to the best means of preventing its ravages.

Professor Henslow referred to the formation of sugar in plants, and exhibited a crystal which had fallen from near the corolla of the common Rhododendron. Immediately after the saccharine matter had exuded, it formed a crystal.

Mr. G. W. Hall called attention to a statement of facts connected with the acceleration of the growth of wheat. The average length of time required for the growth of wheat was about ten months; but observation had led to the conviction that much of this time might be saved; and the result has shown that five months have sufficed to produce an abundant crop of wheat (a sample of which was exhibited to the section), by adapting the plant to the soil. The lighter silicious soils, when manured, possessed a warm and stimulating character, and conduced to a very rapid growth of plants, but they soon became exhausted; and it must be evident that an acceleration of the growth and ripening of the plants committed to a light soil, and a diminution of the time required for perfecting its crops, must not only be congenial to its character, but tend to economize and prolong its productive powers. These circumstances had been observed and acted on with the most beneficial results in various ways.

TUESDAY.—Dr. Richardson read a second portion of his paper on North American Zoology, embracing the Mammalia, his observations on the species having reference generally to the similarity of the North American Zoological division to that of Europe, and the comparatively small connection with that of South America, notwithstanding their geographical approximation.

Mr. Bowman read a paper on the mode of ascertaining the age of yew trees, by counting the rings and lines of the trunk; and instanced several experiments which he had made. The mean average of the number of lines which a tree increased in a year was two, or forty-four to the inch; and the result of his experiments went to prove that De Candolle was wrong in his experiments in this respect—that he made the old trees too young, and the young ones too old.

Dr. Riley exhibited the stomach of the seal caught in the Severn, and stated that, on preparing the skeleton of the animal, he found from thirty to forty pebbles contained in it; which fact he mentioned, to point out the manner in which it is said seals catch fish.

Mr. Hope produced a hermaphrodite *Lucanus* from North America, and a curious discussion ensued on the subject of these vegetable monstrosities. Mr. Yarrell mentioned similar occurrences which he had observed in lobsters, a fish, and a fowl, in which the double sex was obvious.

Mr. Hope then read an interesting and elegantly written paper

on certain notions of antiquity derived from the ancients. In the course of it he said, that from the waters of the Nile spring into life myriads of insects, and with annual fertility the Egyptians were plagued with flies. It was curious that five out of the ten plagues of Egypt were from insects, viz. the plague of the waters of the sects contained in it—of lice (from the soil) of hail, of frogs, and of Nile being turned to blood—which might have arisen from the inflies, probably generated from the heaps of putrid frogs. Cleanliness not being much esteemed in Egypt, flies multiplied exceedingly, which led the people to erect and worship gods, who might be able to rid them of their tormentors. It was the general opinion in ancient times, that spontaneous generation was caused by fire, earth, and water; this opinion was prevalent so late as the 10th century, and was still held in Africa and Asia, and also by one class of naturalists in Europe. He should say that reasoning from analogy, there was no such thing as spontaneous generation. Mr. Hope also referred to the transmigration of souls; the belief in this he thought originated from the changes in the animal kingdom, which in conclusion he described.

Mr. G. W. Hall then made some observations on the effects of lime variously applied to different soils and different crops, and the quantity and modes most beneficial to vegetation.

WEDNESDAY.—Col. Sykes read a highly interesting communication on the fruits of the Deccan.

Mr. Mackay read the Report which he had been last year requested to prepare, "On the Geographical Distribution of the Plants of Ireland." This contained a catalogue of 195 of the more remarkable species, with a comparative view of such as were common to the neighbourhoods of Dublin, Edinburgh, and the south coast of Scotland.

Dr. Hancock read a paper "On the Cow-fish, *Manatus fluviatilis*, of the inland waters of Guiana." This is now rarely met with, except in districts far remote from European settlements. Two specimens which he had examined were less than nine feet in length, and might weigh about 800lbs. each. The female bears one young at a birth, rarely two, and this she carries under one arm hugged to her breast. He considered that it would be both easy and profitable to domesticate this animal in the shoal lakes of Guiana.

Dr. Macartney made some observations on the preservation of animal and vegetable substances from the attacks of insects. He employed a concentrated solution of equal parts of alum, nitre, and salt, mixed with an equal quantity of proof spirits and a little oil of lavender or rosemary. A forcible injection of this liquid into the arterial system would perfectly preserve a dead body for three or four months fit for dissection, and portions of one which had been thus injected, if rubbed over with pyroligneous acid, might be preserved for any length of time. He recommended a coat of Plaster of Paris to be daubed over succulent plants as a mode of preserving them, and, when dry, this might easily be removed. He noticed the entire preservation of some bodies found in the bogs of Ireland.

The Rev. Mr. Hope read a communication from Mr. Raddon, "On the Means of obtaining Insects from Turpentine," and exhibited two cases, containing a vast number of very fine specimens. Mr. Hope observed, that in future it would not be necessary to proceed to America to procure insects, as it was only to go to the warehouses of those merchants who imported turpentine, and by searching through it when boiling, they might very shortly obtain sufficient specimens to form fine collections at a few shillings' expense.

THURSDAY.—Dr. Richardson read the concluding part of his report on North American Zoology which treated principally of birds and fishes. He also incidentally referred to a small fish which drummed at the bottom of vessels on the North American Coasts, and so loudly as to shake the vessel, and to render it utterly impossible for persons unaccustomed to it to sleep.

Mr. Mackay then read a communication he had received from Mr. Nuttall, "On the Management of the Pine Tribe." Where the plants grew too rapidly, or out of proportion to their rooting, he found that this defect was corrected by breaking off the fully-developed buds in the spring, except from the short branches. Larches he had cut down to a strong lateral branch, which ultimately became a choice tree. He remarked, that he had observed that resinous trees escaped the effects of lightning, whilst others were struck.

Mr. Carpenter read an elaborate communication on Criteria of Species founded on the views of Dr. Prichard. This called forth a discussion, in which Mr. Vigors, Mr. Carpenter, the President, and Dr. Prichard took part.

Several other papers were also read during the meeting, but our limits do not allow us to particularize. A vote of thanks having been passed to the chairman the section separated.

SECTION E.—MEDICAL SCIENCE.

President—Dr. Roget.

Vice-Presidents—Dr. Bright, Dr. Macartney.

Secretary—Dr. Symonds.

Committee—Dr. Bernard, Dr. James Bernard, S. D. Broughton, Esq., Bracey Clarke, Esq., H. Daniel, Esq., George D. Fripp, Esq., Dr. Marshall Hall, W. Hetling, Esq., Dr. Hodgkin, Dr. Houston, Dr. Howell, Dr. James Johnson, R. Keate, Esq., O. King, Esq., Dr. Prichard, Dr. Riley, Dr. O'Beirne, Dr. Carson, R. Smith, J. Swayne, R. Carmichael, E. Cock, J. Cusack, J. Estlin, O. Rees, N. Vyse, Esqrs.

As the reports read before this section, although no doubt highly important to the profession, are not calculated to excite so much general interest, we must content ourselves with a brief enumeration of the papers read at the respective meetings.

MONDAY.—Dr. O'Beirne read a Report of the Dublin Committee on the Pathology of the Nervous System: also, an abstract of a work on Tetanus. A paper from Sir D. Dickson on Aneurism was likewise read.

TUESDAY.—Dr. Symonds read an elaborate and interesting paper on the treatment of some Diseases of the Brain.

The second paper was by Dr. Houston, descriptive of a Twin Fœtus born without Brain, Heart, Lungs, or Liver.

The third and last paper which occupied the attention of the section this day, was one by R. Carmichael, Esq. on Tubercles. The reading of this paper, many of the propositions of which were illustrated by preparations in a high state of preservation, occupied one hour and a quarter, and commanded much attention.

WEDNESDAY.—The business of the section commenced this morning by reading—1st. A report of the Dublin committee appointed by the British Association, on the Motion and Sounds of the Heart, read by Dr. Macartney. 2nd. A report of the London committee on the same subject, read by Dr. Clandining.

The third subject introduced was on the Gyration of the Heart, by A. F. A. Greeves, Fellow of the Royal Colleges of Surgeons of Edinburgh and London, and one of the Honorary Surgeons of the Nottingham Dispensary.

A paper on the Polarization of Light observed in the Crystalline Lens, by Dr. Brewster, was read by the president; as was also a letter from the same gentleman on the subject of cataract, which, if resisted in its early stages, the Doctor believed might be overcome. This disease, which generally manifested itself between the ages of forty and sixty, when persons began to require spectacles, the Doctor gave a recipe for detecting, which he had done in his own case; and though perhaps induced by an impaired state of health, yet, by attention to diet and regimen, and taking care not to study by night, he found, in about eight months, he had been cured. If the affection had not been checked in time, he entertained no doubt it would have ended in cataract.

The last paper read was one possessing great interest—"On Absorption," by Dr. Carson, of Liverpool.

THURSDAY.—The first paper read was by Dr. Hodgkin, on the Connection between the Veins and Absorbents. Dr. Reid then read his paper entitled "A short Exposition of the Functions of the Nervous Structure."

Dr. Gayward then read to the section a paper by Mr. Alcock, containing some particulars on the Anatomy of the Fifth Nerve.

Dr. Macartney exhibited to the members a portable probang. Dr. M. also read two short papers: one an account of the Organs of Voice in the New Holland Ostrich, and the other on the Structure of the Teeth. The last paper was by Mr. Walker, on the Nerves and Muscles of the Eye-ball.

FRIDAY.—The first paper read was entitled "Observations on the Pathological Condition of the Bones in Chronic Rheumatism;" and "On the Condition of the new Circulatory Channels in a case of Double Popliteal Aneurism," by Mr. Adams.

The third paper read was a report on "Fracture of the Neck of the Thigh Bone," by Dr. Evanson.

All of the above papers seemed to derive an interest from Mr. Hetling's, "On a new Instrument for the removal of the Ligature

of Arteries" at pleasure. Its use was illustrated by several cases, particularly in the exhibition of a patient with double popliteal aneurism, in whom the operation was facilitated, and the disease cured by the application of this instrument.

The last paper read was on the Chemistry of the Digestive Organs, by Dr. R. T. Thompson.

SECTION F.—STATISTICS.

President—Sir Charles Lemon, Bart.

Vice-Presidents—H. Hallam, Esq., Dr. Jerrard.

Secretaries—Rev. J. E. Bromby, C. B. Fripp, Esq., James Heywood, Esq.

Committee—J. W. Cowell, Esq., M. Dupin, Lord King, M. Von Raumer, Rev. E. Stanley, Colonel Sykes, Dr. Taylor, Henry Woolcombe, Esq., Right Hon. T. S. Rice, Professor Babbage, Dr. Bowring, M. P., T. Wyse, M. P., J. Simpson, Esq., Major Clerk, Professor Mounier, Lord Sandon, Lord Nugent, C. Rowe, Esq., T. Moore, Esq., Rev. W. L. Bowles.

MONDAY.—This section having met in the chapter-house, was soon organized, and occupied Monday with the reading of a long and able paper by Dr. Cleland, contrasting the former and present state of Glasgow. It entered into many curious inquiries, and presented some curious results.—As we propose giving a paper on the statistics of Glasgow, Liverpool, and Manchester, in future numbers of *The Analyst*, we shall refrain from selecting any extracts from these papers on the present occasion.

TUESDAY.—Mr. Kingsley, in exhibiting some formulæ recommended by him to be employed in making up the receipts of the revenue and savings' banks returns, remarked upon what he considered every one present would concede, the inefficiency, for any statistical purpose, of the returns annually made by order of parliament.

A very interesting communication was then made to the section by Baron Dupin, on the Influence of the Prices of Corn on Population. The Baron prefaced his observations by stating that it was formerly held to be indisputable that times of great plenty were favourable, and, on the contrary, that times of scarcity were adverse, to vitality. He had prepared, in France, from the eighty-six departments, returns of the prices of wheat—and in France the returns were officially and accurately taken—and also returns of baptisms, burials, and marriages; and he found that, in the fifteen years preceding the cholera, there were more marriages and births, and fewer deaths, in the period when corn was at a medium price.

Col. Sykes read an important paper "On the utility of co-operating committees of Trade and Agriculture, in the commercial and manufacturing towns of Great Britain, as projected by the Right Hon. Holt Mackenzie, and Mr. Forbes Royle, and advocated by the Right Hon. Sir Alexander Johnstone, and Sir Chas. Forbes, Bart., for investigating more extensively the natural and artificial productions of India."—The object of this paper was to incite the formation of committees in the manufacturing and commercial towns of

Great Britain, either in co-operating with the Royal Asiatic Society, or independently, for the following objects:—1st. To ascertain what articles, the produce of India, now imported into England, are of inferior quality to those produced in other countries; to investigate the causes of the inferiority, and to explain and suggest the means of removing them; 2nd. To ascertain what articles now in demand in England, or likely to be used, if furnished, but not generally forming part of our commerce with India, could be profitably provided in that country, or their place advantageously supplied by other things belonging to it; to take measures for making known in India the wants of England, and in England the capabilities of India; and to suggest and facilitate such experiments as may be necessary to determine the practicability of rendering the resources of one country subservient to the exigencies of the other; 3rd. To ascertain what useful articles are produced in countries possessing climates resembling those of different parts of India, which are not known to this country, and *vice versa*; to consider the means of transplanting the productions and transferring the processes of one country to another, and to encourage and facilitate all useful interchanges of that nature; 4th. With the above views, and for the sake of general knowledge and improvement, to consider how the ology, geology, botany, and zoology, may be most conveniently and statistics of Indian agriculture and arts, including climate, meteor-economically ascertained and recorded; and to encourage and facilitate all inquiries directed to these objects, numerous illustrations of such views were made, particularly by Mr. Royle.

Several gentlemen from the manufacturing districts professed their anxiety to aid the views of the Asiatic Society, in establishing the proposed Committee.

WEDNESDAY.—A paper on Statistical Desiderata, by W. R. Greg, Esq., of Manchester, was presented by the Rev. E. G. Stanley. The author complained of the great deficiencies in all the English statistical tables. In the population returns the census was less than the truth, it having been imagined that the government had some capitation tax in contemplation when it was resolved to number the people. Births and deaths were irregularly recorded; one source of error was that children who died before baptism were entered among the deaths, but not among the births. The bills of mortality were slovenly and incomplete; it was impossible to ascertain which were the months of greatest mortality, and in which the most fatal diseases prevailed. In the returns of marriages, no attempt had been made to ascertain the ages of the parties. The criminal statistics of the country, though greatly improved, were still deficient in classification. But the greatest errors were to be found in the educational reports, the formation of which were intrusted to overseers, who were at once ignorant and careless. The inquiries of the Manchester Statistical Society had shewn that the returns made on the motion of the late Earl of Kerry were erroneous to the extent of one-third of their total amount. He pointed out

several errors in the report made from these returns to the Statistical Society of London ; particularly in the relative numbers of persons educated by churchmen and dissenters. The results of the labours of the statistical committee in Manchester had shewn that forty-six per cent. were educated by dissenters, and only twenty-two per cent. by the church ; and that the centesimal proportions of the Sunday schools gave, in every hundred scholars, sixty educated by dissenters, thirty by churchmen, and ten by Roman Catholics. He referred to Rickman's tables of illegitimate children as another example of the defective state of our registers.

Dr. Lardner then rose to address the section on some statistical results arising from the establishment of railway communications. The subject to which he would call attention was one which, at the present time, was particularly interesting ; but it was not for the purpose of shewing how far railway speculations, as such, might become profitable, that he should bring them forward—he had a higher object, which was that of endeavouring to ascertain and, if possible, to establish the general law which governed the increase of inter-communication which they led to. He was not prepared to lay before them any particular results as to the general effects of railways ; he should confine himself to a few facts which seemed to shadow forth the probability of a statistical law in reference to the point to which he had alluded. When the Liverpool and Manchester railroad was projected, it was designed for the transit of goods only, at the rate of ten miles per hour ; but it was unexpectedly found that treble speed was attainable, and then passengers became the primary consideration. Previous to the establishment of the railway, there were twenty-six coaches between Liverpool and Manchester, and the number of passengers making one trip was about four hundred per day. Immediately on the establishment of the railway, that number rose to twelve hundred ; thus, in the very outset, an increase took place in the proportion of three to one. The railway had been in operation, he believed, since 1829, and from that period the number of passengers had gone on increasing, with the exception of the period of the cholera, which might fairly be omitted in his calculations, and now the number was fifteen hundred per day, being a further increase of one in four ; and thus it appears that no less than half a million travel by it annually. Now the population of Liverpool was 165,000, and that of Manchester 183,000, making a total of 348,000 ; and thus they would see that, out of those populations, an intercourse of more than half a million took place annually. The time by the fastest coaches was three hours ; the time on the first opening of the railway was, by the fastest trains, one hour and a half : now it was but an hour and twenty minutes. The fare of the coaches was, outside, half-a-guinea—what it was inside he could not then recollect : by the railway the average fare was four shillings and sixpence. In this instance, diminution of time and expense both combined to increase the number of passengers ; and the increase, it should be borne in mind,

was exactly four-fold. Dr. Lardner then proceeded to give the result of his statistical investigations on the railway between Newcastle and Hexham, and Dublin and Kingstown. Dr. Lardner next made some remarks on the value to new companies of the experience gained in working the Liverpool and Manchester railway. The charge for transport of passengers on the Manchester railway was 1.84-100ths of a penny per mile, the actual cost to the proprietors about one penny per mile: whereas a Birmingham manufacturer had entered into a contract by which the passengers on another line would be conveyed at the cost of one farthing a mile, including every expense of locomotive power, the company merely finding the carriages and the road. The same company had also formed a contract for the conveying of goods at one penny per ton per mile; the contractor, as in the former case, defraying every charge for engines, &c. Dr. Lardner then proceeded to shew the possibility of attaining so high a rate of speed as fifty miles per hour, and dwelt at great length on the effects likely to result to the general commerce of the country.

Mr. John Taylor, Treasurer to the Association, read a paper "On the Comparative Value of Mineral Productions of Great Britain and the rest of Europe." A calculation, he said, was made by Mr. C. F. Smidt, in 1829, of the value of the mineral productions of Europe, at continental prices; and, from the accuracy of the statements coming within Mr. Taylor's own knowledge, he was disposed to believe in the others. It should be born in mind that the continental prices differed greatly from those in England, and, consequently, that the amounts were comparative, and not absolute value. The value of the mineral products of Europe, including Asiatic Russia, were,—gold and silver, 1,943,000; other metals, 28,515,000; salts, 7,640,000; combustibles, 18,050,000; making in round numbers a total of about 56 millions exclusive of manganese. Now to this amount Great Britain contributed considerably more than one half—viz. 29 millions, in the following proportions: silver, 21,500; copper, 1,369,000; lead, 769,000; iron, 11,292,000; tin, 536,000; salts, 756,250; vitriol, 33,000; alum 33,000; coal, 13,900,000. He then gave a sketch of the history of mining in Great Britain, dwelling strongly on its vast increase since the introduction of the steam-engine.

Dr. Yellowley read a paper, containing some account of the employment of Spade Husbandry on an extensive scale in the county of Norfolk. The paper contained a very minute account of all the items of expenditure and return.

THURSDAY.—Professor Forbes detailed to the meeting the results of his experiments on the average height, weight, and strength of about 800 individuals, natives of Belgium, England, Scotland and Ireland.

A paper, by Dr. Collins, late master of the Dublin Lying-in Hospital, on the Periodicity of Births, was read by C. Fripp, Esq.

Baron Dupin exhibited two maps of Great Britain and Ireland, very ingeniously shaded, so as to show at a glance the comparative

density of population and the comparative state of crime in their several districts.

The report of the Committee of the Manchester Statistical Society, on the state of Education in the borough of Liverpool, was then read by T. Heywood, Esq. This document, which was of considerable length, went very minutely into every particular of the several schools, the whole of which had been visited in person by the agents of the society. The population of the new borough of Liverpool is 236,000: the number of children in the schools, including 6,000 under the age of five years, is 33,183; being 15,500 more than the number stated in the returns made to government. The report gave evidence of considerable labour, and was drawn up with great ability. In speaking of the inefficiency of the lower class of schools, several anecdotes, as related by the agents, were given, tending to show the utter ignorance and total incompetency of their conductors: one of the masters being asked if he taught morals, replied, "That belongs more to girls' schools;" and a female being pressed to count the number of her scholars, which she was unable to do, excused herself by saying, "Oh, no,—David counted the children of Israel, and what a pretty mess he made of it!" The report concluded by recommending the establishment of a Board of Public Education, as the first step in the performance of an important obligation on the part of a benevolent and an enlightened government.

Mr. B. Fripp read a paper on the statistics of popular education. As this paper was not complete in all its details, we shall revert to it on a future occasion.

The population of Bristol and its suburbs (now incorporated in the new borough) according to the census of 1831, was 104,378, which number, at the usual rate of increase, $1\frac{1}{2}$ per cent. per annum, must have become about 112,438 at the present time. The number of children attending schools, according to the returns obtained, is 14,717. In allusion to the subjects proposed to be taught in the schools, Mr. F. says, it must be seen how very inadequate the existing modes of instruction must be to give the young any substantial knowledge, or to invigorate and train their faculties for self-improvement, as well as for the ordinary duties of life. The bare acquisition of the power to read, will, in most instances, excite a desire for further knowledge; but, unless this desire is properly directed during the period of their schooling, there is little chance that their mental energy, in after life, will be exercised either to their own improvement or to the benefit of society. * * * *

Educate the people to a sense of their own high destiny, as rational and accountable beings, and to a conviction of the intimate connection between duty and happiness, and, though we shall never cease to hold in admiration the virtues of a Howard, a Clarkson, and an Allen, we shall find more imitators of their bright example, though it may be in much narrower spheres, and a spirit of philanthropy will be more diffused through all classes.

Thomas Wyse, Esq., M.P., then rose, and addressed the section, in one uninterrupted flow of eloquence, for the space of half an hour; in which he contended that though education in England, as far as it had proceeded, might not have realised, to the full extent, the expectations formed of it, yet that no one could deny the effects it had produced where it had been conducted on a comprehensive system, dealing with the whole man, and adapted to the development of his moral and physical energies. In alluding to the defective state, generally, of the schools, both public and private, in Great Britain, and to the incompetency of the majority of persons employed in the work of tuition, which he ascribed to the neglect and indifference with which that class of persons are usually regarded, he took occasion to pay a very handsome compliment to the Bristol College, which, he said, embodied the true principles upon which alone a sound education could be imparted.

The Rev. E. Stanley warmly insisted on the beneficial influence which the instruction imparted to the poor had exercised in his own neighbourhood; he, however, should be happy to see a more comprehensive system than that at present employed, and he doubted not that the result would be correspondingly beneficial. He had lately returned from the continent, and there he saw—not in the city merely, but in the mountain-village—effective schools, accessible to the lowest classes, in which a course of education was pursued calculated to inform and elevate the mind. In these schools he had found the masters, from their acquirements, capable of conversing with him on any subject; indeed, they were men with whom he should feel it an honour to be associated: and these were the materials with which our own schools must be constructed, if we desired to impart to the rising generation a really intellectual education.

SECTION G.—MECHANICAL SCIENCE.

President—Davies Gilbert, Esq.

Vice-Presidents—M. I. Brunel, Esq., John Robison, Esq.

Secretaries—T. G. Bunt, Esq., G. T. Clark, Esq., William West, Esq.

Committee—Captain Chapman, G. Cubitt, Esq., J. S. Enys, Esq., William Hawkes, Esq., F. Hodgkinson, Esq., Dr. Lardner, Professor Moseley, M. le Playe, Sir John Rennie, George Rennie, Esq., John Taylor, Esq., Rev. W. Taylor.

MONDAY.—The business of this section opened with Professor Moseley's "Observations on certain points connected with the theory of Locomotive Carriages." The Professor commenced by stating that there were many gentleman present acquainted with the practical working of steam-engines, but the relations between the theory and practice were not perfectly understood. The piston of a locomotive engine was pressed on either side by a force; one resulting from the friction on the road, and the other from the passive friction of the engine itself. If it was lifted from the ground,

a person endeavouring to move the wheels would find a resistance equal to 150lbs. ; the cause of the resistance was this, that the traction upon the engine induced additional friction of the machinery, and that, probably, was one-fifth of the whole amount of friction. If the carriage moved without a train, there would be a passive resistance ; if a train were attached to it, there would be induced a considerable friction of the machinery. There were, in fact, three causes of resistance—the friction of the carriage, the passive resistance, the additional friction by the train ; the first and last varying according to the weight of the train. On the other side there was the expansive force of the steam. The quantity of work done was greater as the velocity was less. He would chiefly apply himself to inclined planes. Great power was required in drawing a train up an inclined plane, but when the train came down the inclination no additional power was gained, because the steam evaporated through the safety-valve. On this account, in addition to the loss of time, inclined planes on railways were highly injurious, and should be avoided. Dr. Lardner stated his entire concurrence in all that had fallen from Professor Moseley.

A very important discussion arose on the application of our knowledge of the phenomena of waves to the improvement of the navigation of shallow rivers and canals, by Mr. Russell ; the result of whose experiments are detailed in the proceedings of Tuesday, Section A.

TUESDAY.—Mr. Hawkins read a paper on an Improvement on Neper's Rods, for facilitating the multiplication of high numbers, with little liability of error ; the invention of J. N. Cossham, Esq., of Bristol.

Mr. Daubeny explained the properties of an instrument he had contrived for obtaining sea water at great depths for chemical analysis.

Mr. Braham explained an improvement he had made in the mariner's compass.

There being no other business before the section, it broke up early.

WEDNESDAY.—The Chairman read a paper on Naval Architecture, sent by Mr. Henwood, of Portsmouth Dock Yard.

Mr. Price exhibited a model of a new construction of Paddle Wheels, he had them placed on his steam vessel, and he could now do 108 miles in eight hours and a half. The paddle rose vertically and the water ran off, and it was also a saving of one-third in fuel and time. These paddle wheels were adopted by the Ordnance.

A discussion ensued between Mr. Russell and Mr. Price, which did not terminate until 3 o'clock, when the meeting broke up.

THURSDAY.—Mr. Chatfield read a very long essay on Naval Architecture. Mr. Enys gave a most interesting account of the Cornish steam-engines.

Dr. Lardner then proceeded at great length to detail his plan for steam communication with the United States. After pointing out

the practicability of the scheme, as far as regarded the stowage of a sufficient quantity of coals, and the inexpediency of attempting a *direct* voyage to New York,) as the supply of fuel would only admit of a run of 2080 miles,) observed the question then became a geographical one as to the best mode of accomplishing the voyage. There were two ways which might be proposed; one, to make the Azores an intermediate station, and to proceed from thence to New York: the other would be to proceed to some point in Newfoundland, and make that an intermediate station; the distance from Bristol to the Azores is 1300 miles, and from the Azores to New York 2400 miles, being 20 per cent. more than the steam limit he had mentioned. There was a point called Sidney, in Cape Breton, where there were coal mines, worked to a profit by Messrs. Rundell and Bridge—but then, that was 2300 miles; but if we took our final departure from some place upon the western coast of Ireland, and there charge the vessel with coals, the distance to Sydney would be only 1900 miles. The railroad system might be established in Ireland, which would be a benefit in more ways than one; London and all the southern section of the country would pour in their produce and population by the railway to Bristol.

Mr. Brunel then pointed out some errors in the calculation made by Dr. Lardner, which would be in favour of the undertaking: he was convinced nine or even ten miles an hour might be accomplished.

This discussion, which created the greatest possible interest, closed this section, which has been completely filled during its sittings.

The Public Dinner, on Monday, at the Horticultural rooms, was attended by upwards of five hundred persons, the Rev. Dr. Lloyd, the Provost of Trinity College, Dublin, in the chair. Soon after seven the company adjourned to the Theatre, which was crowded in every part. At eight o'clock the president of the previous meeting at Dublin, Dr. Lloyd, commenced the business of the evening by addressing the assembled members; in the course of which he eulogized in glowing terms the Association and its purposes: "by the rapid interchange of scientific knowledge, and putting forth the giant powers of the mind, to combine with one simultaneous effort those engaged in kindred pursuits, thereby accelerating the progress of discovery and the advance of knowledge. * * The practical mechanic, as well as the philosopher (he subsequently observed), share alike in and aid our labours; and from this Association also does the statesman seek his materials wherewith to improve the social edifice. If I may use a figurative expression, it bears an analogy to a brilliant gem, which, though it may be dignified by its setting, yet its own native lustre is not impaired or improved by any thing extrinsic. Yet, nevertheless, permit me now to offer to you my congratulations on the splendid setting it is about to receive, and which is only fitting its inestimable value, in the countenance and support of the Marquis of Northampton, whom I now beg to introduce to you as the chairman."

The noble chairman then addressed the meeting; and, after expressing his sympathy with the melancholy event which deprived them of the presence of the Marquis of Lansdowne, panegyricized the Association and its effects in expressive language. "I trust (he said) that Bristol will follow the example of the other places which this Association has visited; and that, for this week at least, all sectarian feelings will die away, and the hideous forms of political and religious animosity will be banished: it is not by hating our fellow-citizens that we show either our patriotism or our religion. This happy consummation is one of the great moral advantages of the Association. There is another point to which I wish to advert: there have arrived to join us many distinguished persons from foreign parts; I am sure it is not necessary for me, in Bristol, whence Sebastian Cabot sailed, to urge upon you to welcome and cherish them. Shew to them that the time has at length arrived when Science and her sisters, Religion, Arts, and Literature—those four enchantresses, with their magic wand, have scared away the fiends of national enmity and strife; and that all nations are now united in furthering the common interest of our common species."

Dr. Daubeny, as one of the secretaries for the Bristol meeting, on whom the task devolved, next addressed the assembly, and gave an excellent *resumé* of the proceedings of the past year, and analysis of the volume of transactions, which has just been published. We are reluctantly compelled to confine ourselves to his concluding remarks:—"What proportion of such inquiries (*i. e.*, those contained in the volume over which he had gone) may be attributable to the influence of this Association, and how much might have been merely the result of that increased taste for physical research to which the Association itself owes its existence, I do not pretend to determine; this, however, at least, must be allowed, that many of the most important truths communicated might have been long in winning their way to general recognition, and in ridding themselves of those exaggerated and mistaken views which are the common accompaniments of every infant discovery, had it not been for the opportunities which these meetings afford of examining the very authors of them, with respect to their own inquiries; of confronting them with others who have prosecuted similar trains of research; of questioning them with respect to the more doubtful and difficult points involved; and of obtaining from them, in many instances, an exhibition of the very experiments by which they had been led to their conclusions. * * * It is consolatory to reflect that Providence has attached to every one of the conditions of society through which nations are destined to pass, capabilities of moral and intellectual improvement; and that the very sciences which so amply minister to our physical enjoyments also afford the means of those higher gratifications which spring from the exercise of the taste and the imagination. Thus, although it may not be easy for the citizen to indulge to any extent in studies alien from the pursuits which engross his hours of business, yet it cannot be deemed

incompatible with the latter to mount up to the principles of those sciences which are connected with the arts he practises; to study their relation one to the other; and to acquaint himself with the steps by which they have reached their present eminence. It cannot but be useful to the chemical manufacturer to study the laws of that molecular attraction which binds together the elements of the substances which he prepares; to the mechanic, to examine the processes of the arts in connexion with the general laws of matter; to the miner or land-surveyor, to inform himself with respect to the physical structure of the globe; to the agriculturist, to become acquainted with the principles of vegetable physiology, and the natural relations of plants."

The secretary then proceeded to read the report of the finances of the Association; by which it appeared that the receipts were £3,185. 15s. 3d., the disbursements, £2,576. 8s., leaving a balance of upwards of £600.; the property of the Association amounting altogether to £4,564.

The secretaries of the different sections then read their reports of the proceedings of the sections in the morning.

At the Dinner on Tuesday, the Rev. W. D. Conybeare presided. The attendance was not so numerous as on the previous day—only two hundred being present.

In consequence of the unpropitious state of the weather, the intended promenade and horticultural exhibition at Miller's gardens were abandoned, and the Geological, Mechanical, and Statistical Sections met in the evening. The proceedings are noticed under the respective Sections.

On Wednesday, the dinner was attended by about 180 members; Professor Griffith in the chair. In the evening the Theatre was again excessively crowded.

Dr. Daubeny having been called on by the Chair, came forward and delivered a lecture on Mineral and Hot Waters. This led to a discussion by Professor Phillips, Mr. Taylor, Dr. Hare, and Prof. Whewell. The opinions entertained were—that the lower you descend into the earth, the higher is the temperature, and for that reason it is imagined that, at the centre of the earth there is an absolute fluid of fire, and that the rocks (particularly St. Vincent's) were torn asunder by some volcanic action, and that hot springs are produced by the same cause.—The presidents of the different sections having read their reports, the meeting broke up, but not till after midnight.

Professor Buckland presided at the dinner on Thursday, which was attended by about 150 gentlemen. In the evening, Miller's Nursery grounds were thrown open to the members of the Institution, and the ladies they brought with them; and interesting as the proceedings of the week had been, this promenade came in for its full share of public approval. The philosopher, who at the different meetings had astonished the auditors by the vast depth of his scientific knowledge, was here seen indulging in the luxury of female

society, throwing aside the stern tone of the lecturer, and mixing with the busy throng.—In the course of the day, Mr. J. Simpson, Advocate of Edinburgh, delivered a lecture on the Philosophy of Education, at the Assembly-rooms. It was attended by a genteel audience of both sexes, and elicited very warm admiration. Mr. Simpson's views are just and rational, and he is eminently happy in the illustration of his principles. Anecdotes of Sir Walter Scott, and frequent playful and entertaining allusions, rendered his arguments as popular as they were clear, and well calculated to promote the best interests of society.

A great number of the members of the Association went to Hanham, by water, on Friday morning, to view the progress of the Great Western Railway. The arrangement of the procession, and the provision for the requisite accommodation of the visitors were undertaken by Captain Claxton. During the progress of the procession, the banks of the river were crowded with spectators—Another portion of the members embarked in the Killarney steamer, and after viewing the fine botanical and mineralogical collection of Mr. Bright, at Ham Green, Mr. Miles's splendid picture-gallery, at Leigh Court, continued their voyage round the Holms, and returned to Bristol in the evening.

There was a general meeting this evening at the Theatre. The Marquis of Northampton presided.—The presidents of the different Sections reported their proceedings, and Dr. Buckland alluded most particularly to the discoveries made by Mr. Cross. The patrons of science owed him great obligations for an achievement which would immortalize his name in the annals of geology.

The President said that Dr. Buckland had observed that Mr. Cross had no intention, when he came to Bristol, of at all communicating his discoveries, but was led to do so by the discussion he heard. This was a very singular and pregnant instance of the advantage derived from this Association.

Dr. Buckland then delivered a short lecture on Geology, and the meeting broke up at 11 o'clock.

The ceremony of laying the first stone of the Clifton Suspension Bridge, performed by the Marquis of Northampton, was a splendid sight; this commencement of the greatest work of science and art, which the skill and ingenuity of man has ever yet attempted, was well timed, and proved a highly interesting termination to the proceedings of the week. The rocky ridges on both sides of the river were crowned with animated human life, and the effect, amid such scenery, can hardly be imagined, far less described.

The following dimensions of the bridge will enable our readers to form some idea of this gigantic undertaking :—

Distance between the two points of suspension	700ft.
Length of suspended roadway	630ft.
Height of roadway above high-water mark	230ft.
Total width of floor	34ft.

Previous to the meeting being dissolved, the sum of £2,710. was voted for the prosecution of scientific inquiries during the ensuing year, being an access of £950 on the previous grant. After a lengthened and animated discussion, it was determined that the meeting of 1837 should be held at Liverpool: the Earl of Burlington was elected president, Dr. Dalton, Sir. P. Egerton, and the Rev. E. Stanley, vice-presidents, Dr. Henry and Mr. Parker secretaries.

ZOOLOGICAL SOCIETY.

At a meeting at the Society's Rooms, Leicester Square, Mr. Gould, after making some remarks on various birds which were on the table, entered into a description of a new genus of birds, for which he proposed the name of *Aplornis*, on account of its simple structure. This genus, Mr. Gould observed, partakes of the characters of the genera *Lamprotornis*, *Lanius*, and *Turdus*; we will, however, endeavour to give an idea of its distinguishing characters by comparing it with the genus *Lamprotornis*. When thus compared, Mr. G. remarked that the species of *Aplornis* are altogether of a more robust form: the beak, which is distinctly notched, the wings, the legs, and the tail, are shorter in proportion; the latter is slightly forked. It may also be distinguished by the want of the splendid colouring so remarkable in *Lamprotornis*, all the species of which, it will be remembered, are of a beautiful rich green colour, with a satin-like gloss. There were two species of this new genus on the table, both belonging to the society; one from New Holland, and the other from the Friendly Islands.

At a subsequent scientific meeting, Mr. Gould exhibited eight species of a genus of *Sylviidæ*; a genus characterized, some time back, by Messrs. Vigors and Horsfield, under the name of *Zosteros*, at which time only two species were known: one or two have since been described. Of others, which were new (and then before the society), Mr. Gould intended describing only two, as he thought it probable the remainder would be noticed in works about to be published by other individuals. For one Mr. G. proposed the name of *albogularis*, and the other, *tenuirostris*. The genus *Zosteros*, Mr. G. observed, is principally distinguished from others of the Warbler tribe by a zone of white feathers, which surrounds the eye, the attenuated and somewhat curved beak; the nostrils being covered by an operculum, and the plumage of both sexes being alike, and undergoing no seasonal changes. All the species known are found in the old world, and they are all, more or less, of a greenish-yellow colour. They approach nearest to the genus *Sylvia*, as restricted by Mr. Swainson.

The continuation of a paper was then read, entitled "Catalogue of the Birds found in the neighbourhood of Scarborough," by Mr. Williamson, which contained considerable information relating to the habits of many of the British birds.

MEETING OF THE PROVINCIAL MEDICAL AND SURGICAL ASSOCIATION.

THE members of this excellent Institution, held their fourth anniversary at Manchester. The members of the Council met on the 20th of July, to make the necessary arrangements for the public business of the meeting, when a discussion took place relative to the place of holding the next anniversary :—Cheltenham was finally determined upon, and Dr. Boisragon proposed as president.

In the evening, the members of the Association assembled at the Royal Institution, when the attendance was unusually numerous, including, among other distinguished individuals, Professor Kidd, Drs. Fox, J. Johnstone, T. Starr, Hastings, R. Streeten, Barlow, J. Conolly, Goldie, J. C. Williams, Jeffreys, Bardsley, Chaytor, Holme; Messrs. Crosse, Nankivell, H. L. Smith, C. H. Hebb, J. A. Ransome, — Turner, &c. &c.

Dr. Holme having been called to the chair, opened the business with a short address, which he concluded by proposing that Dr. Hastings be requested to read the report of the council.

This report gave a succinct outline of the proceedings of the Association, and announced the gratifying fact that the number of members amounted to six hundred, being an increase of one hundred since the anniversary meeting at Oxford. The report then alluded to a similar Association formed in the eastern provinces; the members of which had come to the unanimous resolution of seeking an intimate connexion with the parent Association, for the purpose of co-operating with it in the advancement of medical science. The finances of the institution, which are in a very flourishing state, and the published *Transactions* of the society, next came under consideration. It was announced that, in compliance with the resolution passed last year respecting the formation of a benevolent fund, various local committees had been formed, with whom the central committee were in communication.

The report of the council was approved and adopted on the motion of Professor Kidd, seconded by Dr. John Johnstone.

Several other resolutions, relating to the affairs of the Association were subsequently moved and seconded by Mr. Tudor, Dr. Jeffreys, Dr. Scott, Mr. Ransome, Dr. Barlow, Mr. Hebb, Dr. J. Conolly, Dr. Brown, Dr. Goldie, and Mr. Johnson.

Mr. Turner, of Manchester, after paying a warm tribute to his friend, proposed, that Dr. James Lomax Bardsley be requested to deliver the Retrospective Address at the anniversary meeting for 1837, which was seconded by Dr. Streeten, of Worcester.

The report of the committee of the Benevolent Branch of the Association was then read, and a resolution passed, that the regulations of the Provincial Medical and Surgical Benevolent Society, proposed by the central committee, be adopted.

Dr. Kidd next read to the meeting a paper, consisting of remarks on the anatomical and physiological works of Galen, which the learned Professor was requested to publish in the forthcoming volume of *Transactions*.

On Thursday, the second day of the meeting, after some preliminary business, Mr. Crosse proceeded to read his Retrospective Address for the past year, of which the following is an abstract:—

Some recent improvements in anatomy were first briefly noticed, and the spread of anatomical knowledge in this country was said to be almost a matter of demonstration—the number of able men devoted to teaching it being treble what it was thirty years ago. Manchester, which was the first town to institute a provincial school of anatomy, possessed all the requisites for carrying on such an establishment, in its locality, its wealth, its population, its public medical charities, and last, though far from least, in that spirit of enterprize and philosophical inquiry which is associated with the name of a White, a Percival, a Dalton, and a Henry. The advancement of physiology was attributed mainly to experiments on animals; but, in a few instances, had been recently accomplished by observing diseases. The different improvements in medicine were dwelt upon, and much was attributed to the stethoscope rendering many internal morbid changes cognizable to the senses, particularly those situated in the chest and abdomen, which before were not understood during the life of the patient. No subject had of late more engaged the attention of physiologists than the action and sounds of the heart,—the Report of the meeting of the British Association, at Dublin, might be cited in proof of this. A remarkable discovery by the microscope, of *entozoa* infesting the muscles of the human body, belonged to the past year, and one or two thousand of these animalcules had been found in a square inch of muscle; another species of *entozoon* had recently been found in the intestinal coats of horses. The fact that the saliva is alkaline in a state of health, and acid as often as the stomach is disordered, and the power of iodine to cause salivation, had recently been elicited. The homœopathic doctrine, or new German *reverie*, which had loaded the press with books and worthless periodicals was sarcastically denounced, and quackery in general alluded to. The recent suggestions and improvements in surgical practice were more fully entered into; and amongst the yearly announcements of cures for diseases hitherto deemed incurable, the most prominent was the treatment of cancerous affections by the chloride of zinc in the form of paste, which had recently been tried under the inspection of some eminent surgeons in this country, and found efficacious. The improved methods of applying cold in cases of local inflammation, so much employed in France, and significantly designated the treatment “by irrigation,” were mentioned in terms of recommendation; the irregular use of cold applications in the ordinary method being objectionable, causing rheumatism of joints, and in one instance tetanus, and, unless carefully used, proving worse, as to ease and remedial effects to

the patient, than if no such method were employed.—Hernia had been reduced by applying cupping-glasses, and wooden pads been found serviceable by American surgeons, applied with the common truss, instead of the usual soft pad.—British surgeons have stood foremost in performing operations upon the large arterial trunks, setting the example now followed by other countries; the carotids still continue favourites for experiments upon animals, and in some instances on the human being; and both have been tied in man at the interval of seventeen, and even of twelve days, with a favourable issue; man, however, cannot bear a ligature simultaneously to both carotids, although some animals suffer little from such a proceeding. For a vascular tumour of the scalp, both carotids in man have been tied with a curative result by Professor Kuhl, of Leipsic. Pressure, when the brachial artery is wounded at the bend of the arm in bleeding, has been so often recorded as successful, that it ought to be regarded as the general rule of treatment, when a competent surgeon is called soon after the injury.—The practice of treating varicose veins, by pinching them with forceps, and by passing needles through or beneath them, so as to compress the vein, had been much resorted to, and approved.—The author thought the attention of surgeons required to be awakened to the detecting of recent dislocations of the joints, which are always reducible. The dislocated hip had been reduced after nearly a hundred days, and of the elbow at seventy: the use of the *dynamometer*, for measuring the force applied by the pulleys in reducing old dislocations was recommended, and can be obtained of Mr. Weiss.—Upon the excision of diseased joints, the Memoir of Mr. Blackburn was named as the best Memoir in the country from the pen of a student. No department of simply operative surgery has been more fruitful of good results than the excision of diseased bones; and the upper, as well as the lower jaw, and many other bones of the face, have been recently thus proceeded with.—The little value attached to the practice of midwifery in this country, was referred to, and a belief expressed that hereafter the present state of things would, in the retrospect, be thought very anomalous, when those gentlemen who practise it are regarded as fit only for a secondary station in the profession. A knowledge of diseases of the placenta was advancing in this country. The use of the speculum was also becoming more general, facilitating a correct knowledge and an efficient treatment of uterine disease, which formerly went on uncontrolled by art. Remarks upon polypus uteri, and upon prolapse and inversion of the organ, were added, and the numerous instances of the Cesarean operation having been lately performed in different countries, were adduced, as indicating the improving condition of this branch of practice, which flourishes best where it is most encouraged.

The conclusion of this elaborate essay had reference to the press, the great and mighty engine for the advancement of the medical, as well as of all other sciences; the necessity of attending to the *style* as well as to the *matter*, was insisted upon, and the important office

of the critic described. The British quarterly medical journals had long stood pre-eminent over those of other countries. The *Medico-Chirurgical Review*, of Dr. Johnson, required only to keep in good humour, and to avoid mixing extraneous matter in its pages, to maintain its ascendancy. The accession of the *British and Foreign Medical Review* was a great advantage, and it could not fail to be honourable to this society to rank the editors of that review, Drs. Forbes and Conolly, amongst its members. The establishing of weekly journals in England was an epoch in medical literature. Like any other newspapers, they were taken for amusement as much as for instruction, and became a necessary part of the yearly purchases of every medical practitioner in the provinces. They placed before the profession many matters of minor interest, which could not appear in the quarterly journals, and had become quite indispensable for free and rapid intercourse of ideas between individuals. But from causes which must be sought for in the succession of their rise, so much personality, invective, and even fiction, was mixed up in them, as to characterize them as peculiar, and unlike what was to be met with in any other country. Whatever benefits had arisen from such publications, it must be allowed, by every considerate mind, that the interested contentions, and low personalities, which disfigure their pages, were a great drawback and counterpoise to their utility. Had they at all improved the ethics of the profession? Could the slang of a weekly journal in any way advance medical science, or fail to pander to bad taste and the coarsest feeling?

The value of medical bibliography was next glanced at, and the state of our literature as to biographical works regretted, as being most deficient. The pictorial art and lithographic printing were not forgotten, as to their influence in promoting so useful a science as medicine; the literature as well as the practice of which, the author expressed a hope, would hereafter receive the regular attention of the Association at each annual meeting.

At the conclusion of the address, the thanks of the meeting were unanimously passed to Mr. Crosse.

The report of the committee appointed to consider the proposals of the Eastern Association was next brought forward, and its recommendation adopted. The report of the poor law committee was then read, and ordered to be published in a separate form; and a petition to both houses of Parliament, deprecating the system for providing medical relief for the sick adopted by the commissioners.

The business of the day having been brought to a conclusion, Dr. Barlow took the chair, and upon the motion of Professor Kidd, seconded by Dr. J. Conolly, a cordial vote of thanks was accorded to Dr. Holme, by acclamation.

The proceedings terminated about five o'clock, and at six one hundred and fifty members, with a few friends as guests, dined together at the Exchange.

PROCEEDINGS OF PROVINCIAL SOCIETIES.

BIRMINGHAM PHILOSOPHICAL INSTITUTION.

THE Literary and Philosophical Society attached to this Institution closed its third summer session on Monday, September the 5th. Two of the papers read to the members were adverted to in the last number of *The Analyst*, which contained a detailed notice of the one read by Dr. Ward on the effects of the slow cooling of melted basalt. The papers brought before the society since our last number have been, one by Mr. Wickenden, "On the Geological Changes now taking place on and under the Earth's Surface;" one by Mr. Wills, "On Circumstantial Evidence;" and one by Mr. F. Osler, which contained a description of an anemometer invented by that gentleman, for recording the direction, and measuring and recording the velocity, of the wind. It is the intention of the council of the society to make known to the scientific world this very ingenious and admirable invention of Mr. Osler, as the want of a good self-registering wind-gauge has long been felt by all persons engaged in meteorological pursuits.

SHROPSHIRE AND NORTH WALES NATURAL HISTORY AND ANTIQUARIAN SOCIETY.

AN extremely interesting course of lectures "On Botany and Vegetable Physiology" has been delivered, by Dr. Wilson, before the members of this society. The first lecture was devoted to a consideration of the structure and functions of the seeds of plants. The second comprehended a pleasing explanation of the extraordinary process of germination. The subject of the third was the structure and functions of the stem. The circulation of the sap, and the shape and functions of the leaves, were illustrated in the fourth. The fifth treated of the respiration of plants. The sixth lecture was devoted to a description of the various modes of inflorescence, and a detailed explanation of the various parts of the flower, and their probable uses.

During the course of this lecture, the history of the sexual system in plants was concisely considered, and with the truest feeling and best taste the intelligent lecturer paid the following eloquent tribute to the memory of the immortal Linneus:—"This great man was born in the province of Småland, in Sweden, in 1707. Never was the fame of any man of genius spread more widely or rendered more immortal than his. But however distinguished and extraordinary his merits, as extraordinary and various were the vicissitudes by the expression, correct feelings. Is it not, I would ask, an insult

of his fate, so rugged became the path by which he attained the climax of his greatness. His father (a clergyman) intended him for the church, but he himself preferred to wander in the fields, and was so very backward in his studies that his father, despairing of his abilities, resolved to make him a shoemaker; and had it not been for the kind intercession of Dr. Rothman, who perceived Linneus's talent, he might have succeeded, and the genius of Linneus would have been suppressed for ever. After making choice of the medical profession, Linneus struggled with poverty and its attendant hardships. He was reduced so far as to wear the cast-off clothes of his fellow students, and even repaired his own shoes with card and bark; and not unfrequently the good-will of his college companions furnished his meals. Difficulties and adverse circumstances have frequently been the school in which great men have been formed; they also served to build the greatness of Linneus: and whilst a less energetic character would have been crushed by despair, with him they were fresh incentives to perseverance. When the poverty of Linneus had sunk to the lowest point, fortune and his persevering conduct offered him new prospects. He obtained permission to journey through Lapland, at the expense of the academy; after which his fame increased, and honours fell thick upon him. Linneus was, towards the evening of his life, as happy as his wishes could make him, declaring that he possessed an elysium in his botanic garden. This joy was sealed by seeing his own son made professor of botany, at the age of twenty-two. What a contrast with the stormy paths he himself had crossed to obtain the high seat of honour and peaceful fortune he enjoyed! But he who had been the favoured of nature found her not propitious in his waning years; for the two last of his life might be said to be a slow and lingering struggle with death. Even after having suffered a paralytic stroke in 1774, his public services were continued, in some measure, till 1776, when his already feeble and infirm health suffered another shock. His nerves were now worn out, and his palsied tongue refused its office; he was carried, fed, and dressed, by the hands of others: and during the winter, owing to another shock, his deplorable condition rose to the highest pitch. He expired on the 10th of January, 1778, at the age of seventy years and seven months.

Never were honours more deservedly bestowed, or more modestly borne, than by this excellent man. How exquisitely sensible his mind was to the vicissitudes of fortune, and to the opportunities his advancement afforded him of diffusing vast benefits through the wide world of science, is sufficiently shown by his meekly beautiful description of the humble plant, *Linnaea borealis*, named after him, "a little northern plant, long overlooked, depressed, abject, flowering early."

Keenly and undeservedly as his system has been aspersed by the advocates of other, and in some measure equally artificial, systems, it cannot even by them be denied that it is the most simple, the most complete, and the most generally available one ever attempted.

To its imperfections no one was more alive than its admirable author, who, well aware of the value of a truly natural system, laboured ardently, and in numerous tribes with great success, but still to his accurate and scrutinizing mind not satisfactorily, towards the accomplishment of this desideratum. His unfinished plan, as is well known, was afterwards extended by the learned Jussieu, and now, in fact, forms the basis of the natural system at present in use. The benefits which have accrued to science by the accurate observation and acute discrimination of Linneus, must be abundantly evident to any one who even cursorily glances over the pages of scientific works, and notes, in almost innumerable instances, the same genera, often the same species, and the very names adopted and established by this great man. Truly, and without fear of failure, may we predict, that whilst Science shall flourish, and her temples be incensed with the humble and sincere homage of her numberless votaries, so long shall the name, the discoveries, and the memory of Linneus, bloom with unimpaired, undiminished lustre:—

“Nulla dies unquam memori *te* eximet *ævo*,”

In the seventh and concluding lecture, Dr. Wilson continued the explanation of the remaining classes of the Linnean system, and pointed out the manner of ascertaining the name and history of any plant, and the best modes of drying, preparing, and systematically arranging, specimens of the different tribes for the herbarium.

After detailing the scientific advantages of an herbarium, the lecturer thus feelingly alluded to the delightful associations invariably attached to such collections:—“But there is a result from making such collections, which, although unthought of and unsought for at the time, does not the less surely follow. For what botanist is there who, when he reviews his collection, has not immediately painted vividly before him the spot from which each flower was plucked? Does he not then revisit in his imagination, with feelings almost rivalling reality, every wild scene of nature from the rugged rock to the mountain glen?—or, more tranquil, his thoughts lead him by the gently-flowing stream of the meadow, or he gazes on the ripple of the ocean which murmurs at his feet, till his blood running warmer within him, he remembers the very words and even gestures of dear and departed friends, the companions of his walks. ’Tis thus that the botanist learns to prize and cling to his plants, as all that now remains to remind him of those by whom he was best known and best beloved.”

The learned Lecturer, in conclusion, alluded to the pleasure we all must feel in the pursuit of natural sciences, which, “notwithstanding the aspersions that have been cast upon them as favouring self-conceit, and as being destructive to our best hopes, I maintain are pure and unalloyed, and which, if our knowledge be based upon the sure foundation of religion, must tend to very general improvement, and infuse into every grade of society what is best described

to our nature, for one moment to suppose that the cultivation of our faculties can ever be prejudicial to ourselves or to others? Can a man, who is fearfully and wonderfully made, know too much of himself or of the world around him, which, from the meanest flower at his feet to the glittering star which sparkles in the firmament, proclaims the power, the glory, and the beneficence of an All-bountiful and Omnipotent Creator?"

WORCESTERSHIRE NATURAL HISTORY SOCIETY.

THE ceremony of opening the museum of this society took place on the 13th of September; on which occasion upwards of eight hundred persons attended, including a large proportion of the inhabitants of the county and city distinguished for their literary and scientific attainments. The Bishop of Worcester entered the room about twelve o'clock, accompanied by the members of the council, and at the request of the Hon. and Rev. J. S. Cocks immediately took the chair. His lordship then proceeded to open the business of the day in a brief address, in the course of which he congratulated the members of the society upon the completion of the building wherein they were assembled, in every respect so admirably calculated for the purpose for which it was erected. His lordship concluded by requesting Dr. Hastings to deliver his address.

The learned physician commenced by expressing his regret that so responsible a task had not been intrusted to some veteran labourer in the field of science. "The dedication," he observed, "of this temple to science—this splendid edifice, which, to future ages, will be a monument of the zealous desire of the present generation to advance the progress of useful knowledge—should have been undertaken by some votary more capable than myself of making a suitable offering on its altar." Dr. Hastings then proceeded to shew the good results that are likely to ensue from well-regulated societies formed for the cultivation of knowledge; and, after making some apposite remarks on the advantages and pleasures to be derived from the study of Natural History, traced, in a very lucid manner, the progress of that science from its earliest rude and barren state, to its present advanced and promising condition; and, finally, laid before his audience a succinct account of the labours of its most successful cultivators. This very able and eloquent address was listened to throughout with marked attention, and frequently elicited very considerable applause.

At the conclusion, a vote of thanks to Dr. Hastings was proposed by the Rev. John Peel, and seconded by John Williams, Esq., of Pitmaston, accompanied with a request that the address be printed;*

* In the event of Dr. Hastings complying with the request that his address be printed, we propose giving an analysis in our next number.

a resolution which met with the hearty and unanimous concurrence of the meeting.

After the customary vote of thanks to the chairman had been passed, the company separated, highly gratified with the proceedings of the day.

Previous to the delivery of the address the following gentlemen were elected members of the Society:—Col. Davies, Rev. R. Sargeant, Rev. J. Dudley, Rev. G. E. Larden, Rev. G. Hall, Rev. — Cox, Mr. T. Waters, Mr. S. Dance, Mr. J. Clarke, and Mr. S. Stephens.

Upwards of one hundred gentlemen subsequently dined together, in commemoration of the event; the Right Rev. the Lord Bishop of the Diocese presided on the occasion, and John Williams, Esq., officiated as Vice-president. Some admirable speeches were delivered during the evening, and it was gratifying to observe the interest which the prosperity of this Society appeared to excite.

CRITICAL NOTICES OF NEW PUBLICATIONS.

An Angler's Rambles. By Edward Jesse, Esq., F.L.S., Author of "Gleanings in Natural History." London: John Van Voorst.

THIS volume does not pretend to be a regular guide, or book of instruction to the angler, but is an amusing history of fishing excursions, with sundry adventures which befel the author in pursuit of his favourite amusement in various parts of the kingdom; in which, too, will be found much information in the angler's craft. Its style, observational, conversational, and didactic, blended, is well adapted to the subject, and, now and then, an axiom and a reflection forced on the reader during the piscatory mania, help to give variety to the incidents.

We extract the following interesting observations on the "habits and instinct of fish," as affording a fair specimen of the author's style:—

"Their gills supplied the place of lungs, and are filled with innumerable very delicate vessels, generally divided into four layers, which are attached to a corresponding number of little bones. The scales are covered externally with a sort of slime, which, as Blumenbach says, appears to be in a great measure excreted from small cavities placed in a line along each side of the body. That fish are capable of hearing, there can now be little doubt, from various experiments which have been tried to ascertain the fact. Their sense of smelling also, is very acute. Little can be known of their mental faculties. Some fish are more cunning and cautious than others, while the perch and trout are readily tamed and become very docile. The miller's thumb (*Cottus Gobio*) is the only one in England which appears to have any

natural affection for its young. This little fish deposits its spawn in a hole, and watches it until the young ones are hatched. The Goramy of India, are stated by General Hardwicke, in his account of that fish, to watch with the most active vigilance the margins of the spot which they had selected and prepared for depositing their spawn, driving away with violence every other fish which approached their cover. He adds, that from the time he first noticed this circumstance, about one month had elapsed, when one day he saw numerous minute fishes close to the margin of the grass, on the outer side of which the parent fishes continued to pass to and fro.

"The food of fish is very various, but they may generally be considered as carnivorous animals. They have different and curious modes of procuring it. The eel, for instance, will twist its tail round a rush, or the root of a tree in a rapid stream, and suffering itself to be moved backwards and forwards by the action of the water, will seize its prey in this position. Pike hide themselves under weeds, or stumps of trees, and dart out and seize the smaller fish. Other sorts will disturb the mud by rolling on it, and then feed on the insects which were concealed under it. But perhaps the most curious fact in regard to the mode in which a peculiar fish procures its food, is to be found in the habits of the chaetodon, of the East Indies. The upper jaw of this fish ends in a tube, through which it is enabled to throw water upon the insects which settle upon aquatic plants, so that they fall into it, and thus become its prey. There is also a small fish found in great numbers in the rivers of the Burmese empire, which, on being taken out of the water, has the power of blowing itself up to the shape of a small round ball, but its original shape is resumed as soon as it is returned to the river.

"There are few fish, however, whose habits are more peculiar and interesting than those of the salmo genus. Their migrations from fresh water to the sea, and from the sea to fresh water, twice in the year, the great rapidity of their growth, the efforts they make to ascend rapids, overcoming the almost perpendicular falls of Ballyshannon in Ireland, and of Pont Aberglaslyn in Wales, and the bony excrescence with which the lower jaw of the male is provided, to enable him to remove the gravel, to make a furrow in the spawning season, and which he loses when this operation is over, are facts which must always interest a naturalist."

The fact that, in the month of March, young salmon pass towards the sea as fry, and return in May about half a pound in weight, is mentioned by a gentleman in Scotland who had frequently tried the experiment of marking fish in their passage to and from the sea. Some of them caught in May, and marked, were found to be in July five pounds in weight, having revisited the sea in the interim.

The anecdotes, however, are not all piscatory—they at times take a wider range; some of which are not only amusing, but evince that kind of tact which proves the writer to be well skilled in composition. As a proof we extract the following description of the mode of life of two ancient ladies, residing in the village of Cleveland, Staffordshire, whom the author, in his younger days, often visited:—

"One of them, lady Blount, was the widow of a baronet; and the other, Miss Barbara Newton, was her maiden sister. When I first visited them, they might each be rather more than seventy years of age. Tall and somewhat stiff in their persons, with formal and rather ceremonious manners, observing the strictest etiquette, not only with their visitors, but with each other; they were, nevertheless, unbounded in their hospitality, and dispensa-

ed their bounties with an unsparing hand. Their dress was the very picture of neatness and propriety. I can see them now in their large full caps beautifully plaited and as white as snow, with ruffs round their necks, and white kerchiefs pinned round their shoulders, and covering part of their stiff chocolate-coloured silk gowns. These were made with long waists and short sleeves, having large ruffles attached to them above the elbows. A huge gold watch was appended to the girdle, and they wore rather high-heeled shoes, with little formal buckles attached to them. Their hair was perfectly white, and was disposed in what may be called sausage curls beneath the cap. They wore on their arms a sort of mitten, or gloves with half of the fingers cut off, which enabled them to ply their needles the more readily. Such was the dress of these worthy ladies, who (seated in large arm-chairs on each side of the fire-place, with a small table near them on which their work-baskets were placed) were ready to receive any visitors who might call upon them. The arrival of any one was the signal for the servants to bring in a well-furnished tray of refreshments, of which the guests were expected to partake, as their omitting to do so would have been thought to detract from the hospitality of the mansion. Kind old ladies! Sometimes their home-made wine was recommended, or, if the weather was cold, a glass of old Madeira. Chicken-pies and brawn, also made their appearance, with a huge cake, and fruit of various kinds, all arranged with the utmost propriety."

What with the anecdotes, many of which are irresistibly ludicrous, and some information useful to all rod-and-line catchers of fish, Mr. Jesse's *Angler's Rambles* must be considered an extremely interesting work—in fact, did our limits permit, we should be tempted to quote from its pages more freely. We now leave him, with the ardent wish that he may be induced to devote his time to the study of nature, and give to the world the result of his investigations.

The Sea. By Robert Mudie, Author of *The Heavens*, *The Earth*, *The Air*, &c., &c. London: Ward and Co., Paternoster-row.

In former numbers we have noticed, with well-deserved commendation, Mr. Mudie's admirable volumes of *The Heavens*, *The Earth*, and *The Air*; and we now take a glance at his fourth and highly-interesting volume, *The Sea*. We are later than we intended to have been—indeed, we frankly confess that we are not justified in having so long deferred to draw the attention of our readers to a work which, as a companion to the preceding ones, fully merits all the attention and praise which we have so freely and justly bestowed on its predecessors. The old excuse, however, must be again summoned to our aid, and we are not overstepping the boundary of literal truth, when we affirm that want of room, and not want of assiduity or inclination, has been the sole occasion of this tardy notice.

Whatever of information or of science falls from the pen of Mr. Mudie is always worthy of deep attention, and he possesses a very singular facility of adding to accumulated knowledge and deep reflection the charm of intense interest. His subjects are not lightly chosen, nor are his theories of that speculative order which entangle common sense in a web of misty sophistry, but intelligi-

thereon, as an accommodation to the inhabitants of the contiguous towns. These lands were parcelled out in grants of about half an acre each, properly drained and fenced; and in Worcestershire, very near to the county town, there are now villas, cottages, and cultivated gardens, where all was before unprofitable and unsightly waste. We are aware that many eminent agriculturists designate Sir John Sebright as a mere theoretical man—a schemer—a visionary—one whose Utopian dreams are in a moment blown down by the breath of reality. Would that all great landed proprietors revelled in such propensities and enjoyed such dreams! What is the mere tiller of the land?—A drone of the last century. He only is worthy of praise, as a land-holder, who devotes his talents and his fortune in converting the barren wilderness into productive land—who drains the swampy meadows—who irrigates the arid soil—who plants the graceful and the useful timber—who sows his fields with that seed which his experience teaches him is most productive and best suited to the capabilities of his ground—who improves the breed of cattle by the crosses of all varieties—who decides on the breed adapted to the best purposes of man by his own experience—whose ardour is not cooled by occasional failures—who reflects deeply and decides vigorously—who lives not for himself only, but for the advantage of others—who gives the benefit of his great knowledge, acquired by long experience, to the world at large, by publishing the results, whether of success or failure, either in the cultivation of his land or the rearing of his stock. The agriculturist who thus acts, renders himself indeed useful, and is a blessing to the country in which he resides. In such a class ranks Sir John Sebright.

We will now select a few extracts from the pamphlet, the consideration of which has led us to the comments we have thus made; and although it does not treat of cattle, it will be found instructive as regards the instincts of animals in general, with some conclusions which are, we think, based on reason and probability. This being the sporting season, we have taken the following observations on the domestic dog:

“Perhaps the strongest proof that what is commonly called instinct in animals is not implanted in them by nature is, that very different propensities are found in the various breeds of domestic dogs, and that they are always such as are particularly suited to the purposes to which each of these breeds has long been, and is still, applied.

“The performances of the shepherd’s dog, which would seem to be the result of little less than human intelligence, are much too artificial, and too much in opposition to the nature of the animal, to be attributed to instinct; and yet the young dogs of this breed appear to have a propensity to the performance of these services, or, as the shepherds say, *a thorough-bred one will take to them naturally.*

“I do not believe that the same things could be taught to dogs of other breeds, such as the hound, the greyhound, or the pointer, by the most skillful training.

“The true pointer will often stand at game the very first time that he finds it. The hound will follow his game by the scent with a degree of stea-

diness and perseverance that is never to be found in any other breed. Hounds keep together, or *pack*, as it is technically called; terriers and spaniels will hunt a scent, but not like hounds: and it is not possible to make them *pack* by any training.

"Fox hounds and harriers, even when taken out for the first time, have a very different mode of hunting: the fox hound will press forward, and cast wide; the harrier will keep to, or, as the sportsmen say, *stick* to the scent, and cast back.

"It is well known to all sportsmen that these different modes of hunting are essential to the successful pursuit of the fox and of the hare.

"Most young hounds will hunt partridges or pheasants, but they will almost always leave it off if slightly corrected; but the pointer, who is of a breed that has been long used for the pursuit of the feathered game, although severely chastised every time that he finds partridges (and this is often done daily to young dogs for many successive weeks, with the intention of making them point), will continue to hunt them with the same eagerness as at first.

"The terrier (a breed that is now almost extinct in England) will be very much excited by the scent of a pole-cat, or of any of the animals commonly called *vermin*; but this scent will not produce the same effect upon dogs of any other breed.

"I was told by a man in Hampshire, who was in the practice of finding truffles with dogs, that it was essential to procure those that were of a good breed, or, as I should say, whose family had long been used to find this vegetable.

"There are many breeds of water dogs; they are very different from each other, and vary in size and appearance, from the large Newfoundland dog to the little poodle. But there is one propensity that is common to them all—they will *fetch and carry*, or bring the game to their masters with very little or no teaching. This property may be considered as peculiar to the water dog, although it may be found in some few individuals of other breeds; but it would require a great deal of time, and some skill, to teach it to hounds, greyhounds, and other dogs.

"It is obvious that a water dog that will not bring the game to his master is absolutely useless; therefore, to teach him to perform this essential service must have been, at all times, the first object in his education.

"No one can suppose that nature has given to these several varieties of the same species such very different instinctive propensities, and that each of these breeds should possess those that are best fitted for the uses to which they are respectively applied.

"It seems more probable that these breeds, having been long treated as they now are, and applied to the same uses, should have acquired habits, by experience and instruction, which, in course of time, have become hereditary.

"From these observations, and from many others that might, perhaps, not be intelligible to those who have not attended to the habits of the brute creation, I am led to conclude that by far the greater part of the propensities that are generally supposed to be instinctive are not implanted in animals by nature, but that they are the result of long experience, acquired and accumulated through many generations, so as, in the course of time, to assume the character of instinct.

"How far these observations may apply to the human race I do not pretend to say; I cannot, however, but think that part of what is called national character may, in some degree, be influenced by what I have endeavoured to prove, namely, that acquired habits become hereditary."

Sir John Sebright will, we trust, follow up this treatise, and give to it a form of more general intelligence and usefulness.

The Magazine of Health, conducted by a Practising Physician,
Nos. 4, to 8. Tilt, Fleet-street. 1836.

Quackery is a sin against the commonwealth—it leads astray the pining invalid, who grasps at any nostrum or advice which a bold and impudent pretender to the healing art may publish as an infallible remedy for certain diseases, which he duly sets forth in handbills—and it is an injury to the respectable practitioner, who, at an enormous expense in a first-rate education, in travelling, and in toil, from which the other liberal professions are almost wholly exempt, is doomed to see an ignorant quack bear away the fruits of his labour by puffing his universal panacea on the weak and the credulous, and reaping the harvest of his imposition. Every sensible man is struck with the monstrous absurdity of swallowing cordials and pills which the manufacturer, without the least knowledge of the patient's constitution and habits, asserts to be an infallible specific for about twenty or thirty direful diseases which he enumerates; and yet, strange infatuation! men of sense and discernment are often found in the hour of sickness, to have recourse to this very remedy which in health they so sedulously decry. This is unquestionably patronizing charlatanry to the injury of the skilful practitioner, and can only be palliated by the invalid labouring under mental as well as bodily imbecility.

The Magazine of Health we pronounce to be a very useful publication, and is a decided enemy to indiscriminate and ignorant empiricism. Its original matter is pregnant with valuable information, and its critical notices of books, chiefly medical, are executed with that penetration and acumen which can only arise from multifarious knowledge, sound judgment, and incessant study. That it will be popular, there can be little doubt, for, notwithstanding the able way in which it is conducted, the price of each number is only *eightpence*. It is not often that cheapness and worth thus go hand in hand; but in this instance, it appears that philanthropy has outweighed the grosser consideration of profit.

In an article on Diet and Regimen, there is much said on the virtues of water-gruel to most orders of invalids; and as most persons are ignorant of the correct mode of making it, we shall do some service to our invalid friends by extracting from this subject the proper way in which it ought to be prepared:—

“Mix the meal first in a little cold water, let it stand for a little while, until what will not mix readily with the water, falls to the bottom; and pour off the mixed meal and water from the settlings into a large quantity of boiling water. Stir it well, and let boil for an hour *at the very least*. It is owing to the very imperfect way in which gruel is usually cooked, that it disagrees so often as it does; and we think we are speaking within compass when we say that in nineteen cases out of twenty where gruel has hitherto been found to disagree with the stomach, it will do so no longer if this matter be attended to.”

An Account of the Phormium Tenax, or New Zealand Flax. Printed on Paper, made from its leaves. By John Murray, F.S.A., F.L.S., &c. London: Renshaw.

IN a former number of *The Analyst*, we alluded to the introduction of *Phormium tenax* into this country, as a substitute for Hemp, and of the employment of the fibre of this plant in the manufacture of paper. We are happy to see that Mr. Murray is persevering in his praiseworthy exertions to call the attention of Government to the advantages which would result from an importation of *Phormium tenax* from New Zealand, and its cultivation in our colonies and islands. Our extract must be confined to the derivation of the name:—

“The generic name of *Phormium* is derived from the Greek, *φορμος*, a basket, descriptive of the use to which it is sometimes applied by the natives; while its specific appellative seems to be characteristic of the tenacity of the fibre. There are two kinds of this plant, and they certainly appear to be sufficiently marked to merit the recognition of different species. In one of these species, the flowers are smaller and their aggregations more numerous than in the other. In the one, moreover, the colour of the flower is yellow, while in the other it is deep red.

The *Phormium tenax* has been successfully reared in different parts of the United Kingdom, and Mr. Murray states he has cultivated it on the west coast of Scotland, along the verge of the sea, where the plants have withstood the ordeal of seven winters, without the slightest protection whatever.

Mr. Murray's observations in his Postscript, on the materials employed in the manufacture of cheap paper, are worthy serious consideration. In corroboration of his statement, we could instance a work now in the course of publication, the paper of which is so perfectly rotten that the leaves even now require to be turned over with the utmost care; long before the work is completed the parts which first issued from the press will be crumbled to powder.

FINE ARTS.

Finden's Ports and Harbours of Great Britain, with Views of the most remarkable Headlands, Bays, and Fishing Stations on the Coast. Parts I. and II. London: Charles Tilt.

IN a country so eminently maritime as England, and in an age rife with illustrative works on all and every subject, we might almost wonder that a publication like the present had not long ago been commenced, but now that it is undertaken in so excellent a

spirit we need not regret the delay. The style of engraving is of the first degree of excellence, the drawings very beautiful, and embracing the various aspects of our sea-beat shore; five plates are given in each number, and these of a much larger size than the generality of such works admit. The descriptive letter-press, too, is admirably written; no flimsy, fictitious narratives, no nonsensical bombast, or inflated antiquarianism, but all the interesting and important features of the respective scenes simply, clearly, and graphically described; the requisite information quoted from old authorities, and the present state of things related from evident knowledge of facts: it is most sensibly edited. The views hitherto published are, "Tynemouth Priory and Lighthouse," with the life-boat putting off to the crew of a wrecked vessel; in this plate, the terrific characteristics of a sea-storm are depicted with fearful accuracy. The next plate shews a "View of Tynemouth Castle," with the wreck on the rocks. "Cullercoats," "Entrance to Shield's Harbour," and "Berwick Bridge," are all beautiful pictures of a quieter kind. In the second number is "Holy Island Castle," a magnificent sea and land view, with the old Abbey of Lindisfarne standing in its mouldering desolation beside the ever-rolling ocean, and the light fishing-vessels leaping over the foaming billows, or scudding swiftly in-shore beneath the sheltering rocks. The view of "Bamborough Castle" from the sea, with the heavy storm-clouds gathering gloomily in the background, and the heaving waves swelling around, is a grand scene, but, as a view of the castle itself, we prefer the landward aspect of the ancient pile, with its turretted donjon frowning portentously above the curtain-wall, and its formidable round towers. Its rocky base and commanding position prove how important a place this castle has been in times of yore; those fearful times of feudal power and feudal tyranny, now, happily for us, passed never to return. This drawing has been invested with the same character of gloomy magnificence as the former one, and well does it suit our feelings while contemplating the subject. The foreground and the beautiful group of resting wayfarers is exquisitely engraved. "Newcastle-upon-Tyne" is a busy, bustling picture of a busy, bustling town, and accordingly a very correct portrait. Boats and shipping of all degrees, and houses and other buildings of every age and style, make up a very clever and animated sketch. The "Entrance to the Port of Berwick" is equally good with the plates already noticed, except that the artist has introduced the chimney of a steam-packet without in any satisfactory manner accounting for the rest of its corpus. On the whole, this is a most truly interesting, English, and beautiful work.

SCIENTIFIC MISCELLANEA.

WASPS IN SPRING.—It is generally understood that the Wasps seen in the spring are all females, impregnated the previous winter and destined to continue their race, by becoming each the founder of a nest; from which, before the close of the autumn, myriads are poured fourth to carry on a warfare of rapine on our fruits and larders. On the supposition that this theory is true to the letter, it is obvious that the destruction of these insects in the early part of the season is a matter of no small importance; the following statement may, therefore, prove acceptable, as drawing the attention of naturalists to the haunts of these marauders at a period when the capture of one individual may prevent the appearance of thousands. About the middle of May, when, it will be recollected, a burst of fine seasonable weather succeeded a series of cold northerly and easterly winds, I observed from an hour or two before sunset till dusk, that a close-clipped hedge, composed of thorns, hollies, and sweetbriar, was the common resort of an immense number of wasps. From all quarters they appeared to assemble to this favourite spot, as their resting place for the night—wheeling inwards from the fields round about, they hovered for a few moments over the top or sides, and then dived into the interior; from whence throughout the whole length of the hedge, extending to about forty yards, a constant humming issued, nearly as powerful as that from a hive of bees; I am confident that I speak considerably within compass, when I state that in the course of ten or twelve minutes, I observed above one hundred take up their night quarters in this retreat. As their flight was rapid, betokening full vigour and health, it was not easy to arrest them as they flew by; but availing myself of their short pause when hovering an inch or two over the projecting leaves, I caught several with a pair of nippers—and no doubt a more persevering or more adroit practitioner might have destroyed as many in an hour as would have depopulated his whole garden in the course of a season.

I should further observe, that, by the latter end of the month, the number of the evening visitors was considerably diminished; probably (as I took on the 29th a nest of small size with about a dozen of larva) because the great body had by that time formed their establishments, and no longer required the sheltered retreat of the hedge. The above notice may appear trivial; but I trust that by an observer of nature, it will not be so considered, since it may lead to a close investigation of the habits of these insects, and furnish hints for their destruction, before that rapid increase which a few weeks later sets the exertion of their enemies at defiance.—E. S.

NEW CENTRAL SOCIETY OF EDUCATION.—The prospectus of a New Central Society of Education has been recently published. The object of the Society is to collect, to classify, and to diffuse information concerning the education of all classes in every department: for the attainment of this, the Society proposes to obtain, and from time to time (probably periodically) to publish,—1st. Accounts of systems of education already established, whether in this country or abroad;—2nd. Discussion of the value of various branches and means of education;—3rd. Accounts of books, maps, models, and other aids of education. The labours of the Committee will divide themselves under five principal heads:—1. Primary or Elementary Education.—2. Se-

condary Education.—3. Superior, or University Education.—4. Special, or Professional Education.—5. Supplementary Education. If their materials are as extensive as they hope, the Committee will issue, periodically, separate publications, in each of these departments. The Society is to be supported by subscription, and conducted by a committee of management,—a portion of whose members are to retire periodically.

PARTIALITY OF THE GARDEN OWZEL (MERULA VULGARIS) TO THE COLOUR RED.—I am credibly informed, that in the gardens at Scampston Hall, near Malton, Yorkshire, the flowers of the red daisies on several of the borders used frequently to be plucked off and scattered about, while those of all other colours remained unmolested. For a considerable time the little manipulators were not discovered, but they were at length seen in the act. The Garden Owzel (or, vulgarly, “blackbird”), like the Turkey, and some other birds, is known to be partial to the colour red.—N. W.

LIGHT HOUSES ON THE BLACK SEA.—Experiments have been made by Mr. W. H. Barlow, who is resident at Constantinople, by order of Halid Pasha, the sultan's son-in-law, with a view to the establishment of light houses on the Black Sea. The Pasha suggested the use of Drummond's light, with which, however, Mr. Barlow was acquainted only by report. Experiments, however, were made upon the subject, and the delight and astonishment of the Turks, when the light first shone forth in all its brilliancy, was unbounded. Oil lamps will, however, probably be adopted. It must be generally gratifying to know that the Turks, hitherto so bigotted to old manners and religious prejudices, are availing themselves of the most refined discoveries of modern philosophy. Mr. Barlow is constructing a brass-foundry and boring apparatus, upon a large scale, at Constantinople, with a view of remodelling the Turkish artillery.—*Philosophical Mag.*

DISTILLATION.—A very ingenious apparatus for distilling and rectifying spirits, at one operation, has been invented by Mr. Coffey. A general idea of the principle may be formed by conceiving steam passing through a vast number of small perforations in a series of copper plates, over which wash, previously heated, is flowing. As the boiling point of water is 212° , while that of alcohol is about 172° , the steam condenses, while an equivalent portion of spirit evaporates. The wash flows on to the plates in an uninterrupted stream, and runs off completely exhausted of its alcohol, which passes over sufficiently rectified. For the details we must refer to *The Records of Science*, vol. iii., p. 37. “According to the common process, it requires 12lbs. of coal to distil a gallon of proof spirit, of which 9lbs. are saved by the new system; and assuming the whole of the spirit distilled in the empire at 36,000,000 gallons, which (Colonies included) we believe is not over the mark, the saving of fuel arising from the new methods of distilling, will amount to 140,000 tons of coal per annum! Our continental readers have no idea of the enormous size of some of the Distilleries of the United Kingdom. The apparatus of Mr. Coffey, at Inverkeithing, distils 2000 gallons of wash per hour; and one which he has subsequently erected at Leith, for the same proprietors, upwards of 3000 gallons per hour. There are several of equal magnitude, and we have seen a statement, which we have reason to rely on, which shews that those now erected, or being erected, are of capacity to distil half a million of gallons of wash per day; this wash yielding, on an average, 11 to 12 per cent. of proof spirits.”

WEWILS.—M. Vallery has read to the Academy of Sciences at Paris a paper upon a new method of preventing the ravages of Wewils, and other insects, on corn in granaries. His plan is founded upon the observation of the habits of these animals; and it has the farther advantage of obviating the fermentation that takes place in grain when laid up in heaps. Having ascertained that these insects never breed unless in a state of quietude, and at a certain elevation of temperature in the surrounding medium, he proposes by frequently stirring and turning the grain and exposing it to the air, thus to prevent its fermentation, and at the same time the propagation and increase of the Wewils.

TEMPERATURE.—M. Arago has published an article to prove that the temperature of the Holy Land has not sensibly changed since the time of Moses. The Duke of Ragusa (Marshal Marmont) in a letter to the Academy, disputes the grounds of this assertion and of a similar one respecting Egypt. M. Arago states that there are now scarcely any Palm trees in Palestine, and those that exist are *almost barren*; whereas, there are some at Rome that bring their fruit to perfection. The limits assigned to the vine are also contested. It is stated in the article, that the vine is not productive where the mean temperature is above 70° Fah., as is the case at Cairo; but there are vineyards still at Fayoum, the hottest province of Egypt, that produce excellent wines; and the cultivation of the grape is extending. The Marshal's letter also contains a note on the change of temperature in Lower Egypt. Formerly it scarcely ever rained, and only for a short time at Alexandria, now it rains there for thirty or forty days annually, and sometimes after the middle of October it does not cease for five or six days together. At Cairo, instead of a few drops falling, and those rarely, there are from fifteen to twenty rainy days every winter. It is supposed that this change of climate is owing to the immense plantations of the Pacha, twenty millions of trees having been planted below Cairo. What countenances this idea is the contrary effect that has been produced in Upper Egypt by the destruction of the trees there.—The following are the results obtained by M. Mollet, from some experiments performed with much care on the effect produced upon the temperature of the soil by a covering of turf. With only two exceptions the temperature under the turf was higher than at an equal depth in the bare soil; amounting in the morning sometimes to 3° Fah., and generally to one degree at night at eight o'clock,—the morning hour of observation being nine. The experiment was continued for a month. [It is to be regretted that the time of year at which the experiment was made is not given; and that the experiment was not continued for a whole year. Had this been done, considerable light might have been thrown upon the question of changes of climate in ancient and modern times effected by cultivation. At present, the general idea is that a country covered with vegetation is hotter in summer and colder in winter, than where the soil is bare; such at least is the result of observation in the United States from the clearing of the woods.—ED.]

ABRIDGED LIST OF NEW PUBLICATIONS,

From June 9 to September 9, 1836.

- Aristotle's Rhetoric, with Notes by the Rev. F. J. Parsons, 8vo., 14s.
 Barlow on the Manufactures and Machinery of Great Britain, 4to., 3l. 6s.
 Barlow's (Thos.) Trip to Rome, 18mo., 5s.
 Bateman's (W.) Maguacopia, or Library for the Chemist, &c., 18mo., 6s.
 Beattie's Switzerland, 2 vols. 4to., 3l.
 Berkeley Castle, a Romance; by the Hon. G. Berkeley. 3 vol. post 8vo., 31s. 6d.
 Bickmore's Course of Historical Instruction, 12mo., 10s. 6d.
 British Association, Fifth Report (Dublin), 8vo., 13s. 6d.
 British Cyclopædia: Geography and History, 3 vol. royal 8vo., 2l. 5s.
 Botanist's (The) Manual, fcap., 2s.
 Caldwell's (Dr.) Thoughts on Physical Education, 12mo., 3s. 6d.
 Cooper's (J. F.) Excursions in Switzerland, 2 vol. post 8vo., 21s.
 Coulson on Deformities of the Chest, post 8vo., 3s. 6d.
 Chateaubriand's Sketches of English Literature, 2 vols. 8vo., 24s.
 Chorley's Memorials of Mrs. Hemans, 2 vols. post 8vo., 21s.
 Clark's Anatomy and Physiology of the Nervous System, post 8vo., 9s.
 Empson's Narratives of South America, 8vo., 10s.
 Gallery of Modern British Artists, vol. 2, 4to., 1l. 10s., hlf.-bd.
 Goethe's Faust, in German, with English Notes, 18mo., 5s.
 Hagemester's Report on the Commerce of the Black Sea, post 8vo., 10s. 6d.
 Harris's Mammon; or Covetousness the Sin of the Church, post 8vo., 6s. 6d.
 Hazlitt's (the late W.) Literary Remains, 2 vol. 8vo., 28s.
 Higgins's Inquiry into the Origin of Languages, Nations, &c., 2 vols. 4to., 5l.
 History of Van Dieman's Land from 1824 to 1835, 12mo., 5s.
 Heding's Land Log-Book (United States), 12mo., 5s.
 Jardine's Naturalist's Library, vol. 13 (Elephants, &c.), 12mo., 6s.
 Jesse's Angler's Rambles, sm. 8vo., 10s. 6d.
 Knox's Anatomist's Instructor, 12mo., 4s. 6d.
 Lardner's Cyclopædia, vol. 80 (Greece, vol. 3), 12mo., 6s.
 Lardner's Cyclopædia, vol. 81 (England, vol. 6), 12mo., 6s.
 Lardner's Cyclopædia, vol. 82 (Foreign Statesmen, vol. 3), 12mo., 6s.
 Lewis's Spanish Sketches, imp. fol., 4l. 4s., bound
 Library of Useful Knowledge:—
 History of France, pt. 1, 8vo., 9s.
 Mathematics, vol. 1, 8vo., 6s.; vol. 2, 11s. 6d.
 Large Maps of the Stars, imp. 4to., 1l. 10s. plain, 2l. 2s. coloured.
 Companion to ditto, by A. De Morgan, 8vo., 3s. 6d., roy. 8vo. 5s.
 Magazine of Popular Science, vol. 1, 8vo., 10s.
 M'Kay's Flora Hibernica, 8vo., 16s.
 Mudie's Popular Mathematics, 12mo., 7s.
 Philosophical Transactions, 1836, part 1, 4to., 30s.
 Proceedings of the Zoological Society, pt. 3, 1836, 8vo., 6s.
 Rhind on the Geology, &c. of Edinburgh and its Environs, 18mo., 2s. 6d.
 Ronalds' Fly Fishing Entomology, 8vo., 14s.
 Selections from the Phrenological Journal, edited by R. Cox, 12mo., 5s. 6d.
 Transactions of the Linnean Society, vol. 17, pt. 3, 4to., 1l. 1s.
 Turton's Angler's Manual, fcap., 3s. 6d.
 Twamley's Romance of Nature, 8vo., 31s. 6d.
 Von Tietz's St. Petersburg, Constantinople, &c. in 1833-34, 2 vol. p. 8vo. 31s.
 Walker's Beauty in Women, illustrated by Howard, roy. 8vo., 31s. 6d.
 Watson's Statistics of Phrenology, 12mo., 5s.
 Yarrell's (Wm.) British Fishes, 2 vol. 8vo., 2l. 8s.; roy. 8vo. 4l. 16s.; imp. 8vo. 7l. 4s.

LITERARY INTELLIGENCE.

THE Report of Sir David Barry and Dr. Corrie on the Medical Charities of Ireland will shortly be published. These gentlemen were appointed, by Government, Commissioners for investigating the Management of Hospitals and Asylums.

COPYRIGHT.—Amongst the Parliamentary Notices which stand for next session, is the following from Mr. Serjeant Talfourd—"To call the attention of the house to the law of copyright, with a view to the extension of the time during which the interest of authors in their works shall continue."

METEOROLOGICAL REPORT.

During the first week in June, after the dry winds in May, some genial showers fell. Towards the middle of the month the temperature rose to 76°; the latter end of the month again brought some welcome showers and a mild summer heat. Once during the first week in July, the thermometer rose to 84°; at the middle and latter end of the month showers fell, and the temperature was variable.—August was chiefly fine and seasonable: on the 23rd rain fell abundantly, and the weather for the rest of the month was temperate and pleasant.

JUNE.

1836	Barometer.		Thermometer.		Remarks.		
June	Morn.	Even.	Max.	Min.	Day.	Night.	Wind.
1	29.300	29.220	62	45	Cloudy morn., sun aft.	Clear, fine	N. E.
2	29.040	28.905	61	45	Sun and hvy. showers	Fine	S. E., light.
3	28.850	28.810	61.5	51.5	Clouds and showers	Cloudy	South, fresh
4	28.825	28.965	61.5	53	Fine, clouds and sun	Cloudy, shrs.	South, fresh
5	29.025	29.265	61	49	Cloudy	Cloudy	Westerly
6	29.240		61	43	Clouds and sun		S. W., fresh
7	29.195	29.010	61	49	Clouds and very lt. shrs.	Showery	Southerly
8	28.945	28.930	66	50	Cloudy and showers	Showers	S. W.
9	29.000	29.015	63	52	Cloudy	Cloudy	Southerly
10	29.010	29.030	61	54	Continued rain	Hvy showers	S. W.
11	28.995	29.195	63.5	54	Sun and showers	Showers	S. W.
12	29.300			48.5	Showers	Fine	S. W.
13					Fine	Fine	S. S. E.
14	29.380				Fine	Fine	
15	29.265	29.155	76		Fine, hot sun		Lt. Southerly.
16	29.215	29.220	74	55	Clouds and sun	Showers	S. W.
17	29.200	29.130	72	55	Fine, clouds and sun	Light showers	S. W.
18	29.105	29.005	72	50	Fine, clds., sun, lt. shrs.	Fine	S. W.
19		29.204	68	52	Clouds and light shrs.		N. W.
20	29.345	29.350	66	50	Fine, cloudy	Fine	Westerly
21	29.300	29.225	67.5	50	Cloudy		S. W.
22	29.185	29.080	63	54	Clouds and showers	Heavy rain	S. W.
23	29.070	29.070	66	51	Clouds and sun	Cloudy	S. W.
24	29.015	28.170	65	53	Showers	Fine	S. W.
25	29.045	29.430	64.5	48	Clouds and sun, lt. shr.	Fine	Westerly
26	29.265	29.610	66	48	Clouds, light shower	Fine	Westerly
27	29.600	29.470	69.5	56.5	Cloudy, fine	Shower	S. W.
28	29.425	29.590	70.5	57.	All sun	Fine	S. W.
29	29.615	29.630	72	49	Clouds and sun	Fine	Westerly
30	29.610	29.500	72.5	50	Sun	Fine	Westerly.
Mean Max. 66.2					50.8 Mean Min.		

JULY.

1886	Barometer.		Thermometer.		Remarks.		
July.	Morn.	Even.	Max.	Min.	Day.	Night.	Wind.
1	29.470	29.515	77	62	Hot sun and cloud	Fine	S. W.
2	29.506	29.550	72.5	62	Sun and cloud	Fog in vale	S. W.
3	29.535	29.555	72	53	Fine, sun	Fine	W. N. W.
4	29.555	29.500	80	55	All sun	Fine, lightning	Calm. E.
5	29.410	29.365	84	62	All sun, lightning	Shower early	Southerly
6	29.420	29.520	70	63	Fine	Cloudy	Northerly
7	29.520	29.510	67	49	Chiefly cloudy	Fine, cloudy	Southerly
8	29.610	29.600	68	50	Clouds and sun	Light shower	N. W.
9	29.565	29.505	69	54	Cloudy and sun	Fine	Westerly
10	29.500	29.500	75	61	Cloudy and sun	Fine	Westerly
11	29.410	29.100	75	58	Sun	Fine, cloudy	Westerly
12	29.050	29.285	65	55	Clouds and wind	Windy, showra.	High, W.
13	29.300	29.210	65	47	Clouds and wind	Windy, showra.	High, W.
14	29.260	29.270	64	50	Clouds and wind	Fine	Westerly
15	29.060	28.990	59	50	Showers	Cloudy	S W
16	29.040	29.045	63	45	Clouds, wind, and sun	Showers	Westerly
17	29.205	29.370	65	50	Clouds, wind, and sun	Windy	Boisterous
18	29.400	29.400	64	49	Clouds, wind, and sun	Windy	
19	29.130	29.070	61	50	Heavy showers		Westerly
20	28.825	28.920	55	50	Heavy showers	Rain. early	Northerly
21	28.925	30.065	60.5	45	Showers	Rain	Westerly hgh
22	29.075	29.300	60.5	45	Fine, light showers	Clouds, stars	W. N. W.
23	29.335	29.330	63	45	Fine	Cloudy, fine	Ditto
24	29.020	29.095	62	50	Heavy showers		W. S. W.
25	29.180	29.370	65	47	Cloudy chiefly	Cloudy	N. W.
26	29.400	29.405	67	50			Calm S. W.
27	29.410	29.405	69	53	Clouds and wind		W. S. W.
28	29.330	29.110	74	54	Fine, hot sun	Cloudy, fine	S. W.
29	28.840	28.915	65	57	Wind and showers	Heavy rain	Ditto
30	29.365	29.635	62	50	Cloudy	Windy	W. N. W.
31	29.725	29.630	61.5	47	Clouds and sun	Cloudy	Ditto
Mean Max. 67.0					62.3 Mean Min.		

AUGUST.

1886	Barometer.		Thermometer.		Remarks		
Aug.	Morn.	Even.	Max.	Min.	Day.	Night.	Wind.
1	28.995	28.825	64.5	52	Clouds, light rain, a. m.		W. S. W. vbl
2	29.370	29.370	64.5		Fine, all sun		Westerly
3	29.240	29.050	71	52.5	Clouds and sun, fine	Fine	S. W.
4	29.125	29.300	69	55	Cloudy, hazy	Fine	Nly. & Ely.,
5	29.320	29.410	61	51	Cloudy, hazy	Cloudy, fine	Easterly
6	29.420	29.525	63	54	Cloudy, hazy		N. Ely.
7	29.520	29.510	66	50.5	Clouds and sun, fine	Fine	Easterly
8	29.515	29.540	71	52	Fine, all sun	Fine, clear	N. Ely. light
9	29.550	29.530	69	51	Clouds, haze, and sun	Fine	N. Ely. light
10	29.520	29.570	67	52	All sun, no haze	Fine	N. Ely. light
11	29.600	29.660	68	50	Fine, sun, clear	Clear	N. Ely. light
12	29.600	29.620	71	49	All sun	Fine	Northerly
13	29.620	29.360	73	60	All sun	Fine, lightning	N. E., light
14	29.240	29.230	74.5	54	Fine, clouds, and sun	Thud', lt. shrs	Norly. light
15	29.300	29.430	72	59	Clds. and sun, dis. thn.		Norly., light
16	29.505	29.430	70	58	Clouds and sun, fine		Light, vble.
17	29.455	29.450	69	56	Fine	Fine	Westly. fresh
18	29.320	29.370	65	53	Light showers, fine	Fine, clear	W. S. W.
19	29.510	29.470	63	49	Fine, cool wind	Fine, clear	N. Wly.
20	29.140	29.100	62	54	Heavy showers	Showers early	S. W.
21	29.250	29.190	65	45	Light clouds and sun	Fine	N. Wly.
22	29.075	28.880	60	51.5	Cloudy, showers p. m.	Cloudy	Westerly
23	29.900	29.115	60	51	Heavy rain		N. E., light
24		29.530	63		Sun, clouds, clear		N. E.
25	29.500	29.365	67.5	42.5	Fine, sun, clouds	Showers, evng.	Calm
26	29.300	29.345	62	52	Fine, sun, clouds	Showers	Variable
27	29.200	29.350	63.5	50.5	Showers		West, high
28	29.315	29.365	63	48.5	Fine, all sun	Clouds	W. N. W.
29	29.435	29.460	64	47	Fine, clouds, sun	Fine	W. S. W.
30	29.425	29.415	62	50	Cloudy, fresh breeze	Fine	S. W.
31	29.370	29.250	65	57	Clouds and sun	Cloudy, fine	S. S. W.
Mean Max. 66.3			51.6 Mean Min.				

SOME REMARKS ON THE DISSOLUTION OF THE MONASTERIES.

BISHOP BURNETT in his phillipic against the Monasteries, as the nestling places of indolence, sensuality and irreligion,*—in short, as stained with every vice,—has rather overshot the mark. His sweeping accusations in this respect must be taken with certain limitations. In the first place he forgets the well authenticated fact, how, by their sudden abolition, towns and provinces were converted into nurseries of ignorance. If our historian had been less exempt upon this subject from prejudices—we might write passions—he would have acknowledged that another evil consequence of the monastic revolution was the check given to the intellectual progress of the country by the destruction of many a valuable library. Had not, indeed, these old catholic establishments been as odious to him as the leprosy, he would have been constrained by the mastery of truth and candour to admit that even the rarities of intellect were consigned to the flames, solely because they were found in popish repositories. It was enough that they should be brought out to the market place and there burnt, “if guilty of no other superstition but red letters in their fronts or titles.” We may judge of the extent to which this *vandalic* war was waged against literature, from this single statement of Collier. “Another misfortune,” says he, “consequent upon the suppression of the abbeys was an ignorant destruction of a great many valuable books. The books instead of being removed to royal libraries, to those of cathedrals, or the universities, were frequently thrown to the grantees as things of slender consideration. Their avarice was sometimes so mean, and their ignorance so undistinguishing, that when the covers were somewhat rich and would yield a little, they pulled them off, threw away the books, or turned them to waste paper.”

Leland, it is true, succeeded in some measure in stopping this literary devastation by receiving a commission from Henry which fully empowered him to preserve a vast number of records and manuscripts. But how inefficient after all was the protection by the king of these learned treasures, notwithstanding “his solely sovereign sway,” may be collected from the following indignant evidence of Bale, afterwards Bishop of Ossory. “I know,” proceeds

* See *Hist. of the Reformation*, vol. i., p. 296, 364.

he, "a merchant which shall at this time be nameless, that bought the contents of two noble libraries for forty shillings price, a shame it is to be spoken. This stuff he hath occupied instead of grey paper by the space of more than these ten years, and yet he hath store enough for as many years to come. Our posterity may well curse this wicked fact of our age, this unreasonable spoil of England's most noble antiquities."*

In descanting upon this momentous change in the frame of our ecclesiastical polity, Burnett does, however, allow that "some of the abbots understood affairs well." From this vague and obscure expression, I suppose we are to infer that, at home, these mitred chiefs, as legislative counsellors of the realm, played a prominent part in the civil transactions of the state; and that abroad, from their being frequently employed in embassies throughout the continent of Europe, they had acquired a knowledge of the world, and of various improvements in social life. A less sworn enemy to the monastic foundations would not have failed to notice that, while skilfulness in "the noble art of the chace" constituted the sole pride and glory of the ruling caste, many of the abbots became, to their real credit and honour, the encouragers of "book learning," and their abbatial houses the seminaries of learning and piety.

Under the roof of Thomas Bromele, abbot of the mitred monastery of Hyde, near Winchester, eight youths of gentle birth and blood, received literary instruction and religious education, and were constantly admitted to his table.† The Abbot of Glastonbury adopted a similar practice. "His apartment," says the learned historian of that monastery, "was a kind of well-disciplined court where the sons of noblemen and young gentlemen were wont to be sent for virtuous education, who returned thence home excellently accomplished."‡ Richard Whiting, the last Abbot of Glastonbury, whose execution appears to have been an act of flagrant injustice,§

* *Eccles. Hist.*, vol. ii., p. 166.

† See Warton's *Hist. of English Poetry*, vol. iii., p. 269.

‡ *Hist. and Antiq. of Glastonbury*, Oxon, 1722, p. 98.

§ According to the notorious Sanders, he was hung up near his abbey, and quartered on the same day, without even the form of a trial.—*De Schism. Angliæ*. Lond., 1634, p. 138. But, from the most authentic evidence, it is clear that the commissioners appointed to examine into the state of this monastery did not, through a consciousness of their monstrous illegality, venture upon such extreme proceedings. "My Lorde, thies shal be to assertheyne that, on Thursdaye, the xiiijth daye of this present moneth, the Abbott of Glastonburye was arrayned, and the next daye putt to execucyon with ij. other of his monkes."—See John Lord Russell's letter to Lord Cromwell,

during the period of his rule, educated three hundred youths, who lived domesticated with him, besides bestowing large benefactions upon many indigent scholars who could not support the expenses of an university education. Among the abbots who were themselves the possessors of great mental endowments may be mentioned the names of Hugh Faringdon,* the last Abbot of Reading, William Frysell,† Prior of the Cathedral Benedictine Convent, at Rochester, John Batmanson,‡ Prior of the Carthusians in London, John Webbe,§ Prior of the Benedictine Convent at Coventry, and Kederminster,|| Abbot of Winchecombe, in Gloucestershire. Several more instances might be recorded of abbots who passed their lives

respecting the trial and execution of the abbot and two monks of Glastonbury, in Ellis's *Series of Hist. Letters*, vol. ii., p. 99. The Roman Catholic writers stoutly deny Burnett's assertion, that at the gallows the abbot confessed the justice of his sentence. There can be little doubt but that the whole machinery of persecution was gradually brought into work against him. It was not likely that the richest of abbacies, after St. Peter's, should be allowed to escape the grasp of the secular and avaricious magnates, when so many of the priories were reduced by them to a state of poverty approaching the apostolic standard. There were sixteen mitred abbots which had revenues above £1,000. per ann. St. Peter's, Westminster, was valued at £3,977., and Glastonbury at £3,508.—See Speed's *Catalogue of Religious Houses* apud Collier, append., p. 34.

* See his *Latin Epistles* addressed to the University of Oxford, while the praises bestowed upon them by Warton may be considered as no mean evidence of their excellence.—Vol. iii., p. 278.

† That learned Orientalist, Robert Wakefield, in his *Oratio de laudibus et utilitate trium Linguarum Arabice, Chaldaice, et Hebraice*, pronounces a warm eulogium on him as a judge of critical literature.—See Leland, *Collect.*, vol. i., p. 18.

‡ Robert Shirwoode, who published a latin translation of Ecclesiastes, with critical annotations on the Hebrew text, styles him, from his profound erudition and generous love of letters, *Monachorum Decus*.—Leland, *Collect.*, vol. ii., p. 23.

§ Warton assigns to this monk a high rank as a scholar, when he says that "he controverted Erasmus's *Commentary on the New Testament* with a degree of spirit and erudition which was unhappily misapplied, and would have done honour to the cause of his antagonist."—Vol. iii., p. 272.

|| This admirable person instituted lectures in his monastery for the explanation of the Scriptures in their original language, to which so many resorted that he became the establisher, as it were, of another university.—"Non aliter quam si fuisset altera nova universitatis."—See Wood, *Hist. Univ. Oxon.*, vol. i., p. 241. Longland, the most eloquent bishop of his day, and Henry's favourite preacher, has dedicated to Kederminster five quadragesimal sermons, delivered at Court, in which he expatiates at some length on his *singularis eruditio*, and other rare attainments.

in arduous study and patronised those who trod in their footsteps ; thus illustrating the enlightened and munificent spirit with which they appropriated their vast revenues,* to seize upon which by law—for under the sanction of law Henry did his most barefaced exactions—was, beyond all dispute, the chief inducement for him and his subservient peers to make their imperfect profession of protestantism. It was certainly from no particular admiration of the conventual houses that Williams, the Speaker of the House of Commons, assured Elizabeth that the demolition of the monasteries had effectuated the ruin of an hundred flourishing schools,† and thus ignorance had overspread the land.

Now, admitting the immensity of monastic wealth, yet if we are candid, if we come to the consideration of the question impartially, and without any wrong bias, we must at least admit that a great portion of it was expended in the exercise of beneficence, and the prosecution of apparently disinterested views. Accumulative proof no doubt we have, that a superior form of religion grew out of the confiscation of monastic property, and which has consecrated, so to speak, the movements of Henry against it. But while to the ken of the *Reformed* Catholic, the superstitious pageantry and formalities, the idolatry of saint and relic worship, the ritual disfigured by mummery, the pious frauds and lying wonders performed within the walls of the religious houses, present only objects of rational aversion,‡ still should there be a gentleness and candour infused

* Speed computes the yearly value of the religious houses suppressed in England and Wales, which Camden, in his *Britannia*, affirms to have been 641 at £161,000., composing, as Lord Herbert remarks, above a third part of the ecclesiastical revenues of the kingdom. Burnet, however, asserts, "that the clear annual value, cast up in an account he had seen, to be at £131,607. 6s. 4d., as the rents were then stated, but was at least at ten times so much in true value."—*Hist. Reform.*, vol. i., p. 538. This statement must surely be exaggerated; though it is highly probable that the rapacious and artful courtiers may have undervalued those estates, in the hopes of obtaining grants or sales of them more readily.

† See Strype, *Annal. Reform.*, sub ann. 1562, p. 212.

‡ We have the high authority of Mr. Kinsey for asserting that monkery still produces its usual fruits in Portugal. From many others given by this writer, take the following instance of impious jugglery practised by the monks on the credulous superstition of the people:—"This feast of Nossa Senhora da Conceição da Rocha was announced on the previous night by a grand display of fireworks and an extensive illumination. From the top of the stone cross above the church, the patriots had contrived to make a fiery dove—representing the third person of the Trinity—suddenly descend upon a castle composed of rockets and other combustibles and ignite them. They

into his judgment from the consideration, that these noble masses of architecture were in times of internal warfare and general insecurity the sanctuaries in which peaceful industry, trade, agriculture, and arts found an asylum ; and it must not be dissembled, often did he who fled from the pursuit of justice there find protection, and sometimes presumable it is, amendment of life—the place being so fitted to throw the mind into a train of serious and solemn reflection. In the following lines of a Protestant Poet and Divine, Crabbe, may be said to be chanted the dirge over these fallen monuments of another age :—

“They look, they can but look with many a sigh
On sacred buildings doom’d in dust to lie ;
Where trembling penitents their guilt confess’d,
Where want had succour, and contrition rest ;
There, weary men from trouble found relief,
There men in sorrow found repose in grief :
To scenes like these, the fainting soul retired,
Revenge and anger in their cells expired,
By pity soothed, remorse lost half her fears,
And softened pride dropped penitential tears.”

Be it further observed, that the monasteries were the infirmaries, the dispensaries, the hospitals of the aged sick and needy—the hostels of the weary and benighted traveller—the retreats of the penitent, and of those who shrunk from the tyranny of the baronial castle, and from the strifes and storms of the open world ;*

instantly took fire, and the deluded multitude seemed to rejoice in this shameful familiarity with the Divine Spirit. The forms and ceremonies of the Romish Church, thus addressing the senses and the weak imaginations of the ignorant vulgar, render the attendance on them more a matter of pleasure and relaxation, than the performance of a solemn and important duty, or an act of pure worship.”—*Portugal Illustrated*, second edit., p. 149. This statement, if made by a nameless writer, might almost be discredited on the ground of its not being a possible or conceivable thing, that any European nation in the nineteenth century could be still in the infancy of the world with respect to the cause of truth and the gradual progress of the human mind. The scrupulous veracity, however, of Mr. Kinsey, renders his testimony of facts of the greatest weight ; while his acute and just observations, graphic descriptions of scenery, in addition to the faculty which he has of seizing with a rapidity of glance so happily expressed by the French phrase, *coup d’œil*, the character of a country or people, enable the most impartial criticism to rank his name high among British travellers.

* There is much deep reflection and calm extension of view in this remark of Hume :—“A woman of family, who failed of a settlement in the marriage state—an accident to which such persons were more liable than

and while surveying the remains of some of those bold projecting towers,* so grand and imposing even in their ruins,† he may not be disposed to reject it altogether as an absurd fiction, that the acts of brotherly love and charity‡ done within their habitations were the electrical conductors which so long averted from them the thunder-bolt of destruction. Can we wonder, then, at the murmurings, the repugnance, and even recoiling sense of horror, expressed by many an honest head of a house on what he conceived a most criminal sacrilege, on resigning that which the Prior of Henton says "was not his to geve, being dedicate to Allmyghtye Gode for service to be done to hys honour continuallye, with other many good deeds of daylye charite to christen neybour."§

These monastic rulers were certainly not such monsters as some of our progenitors have painted them; since all who know anything of the times we are speaking of, must be distinctly aware, that they were infinitely better landlords and agriculturists than the lay-proprietors of the soil. In the former capacity, they took the most natural way of encouraging husbandry or tillage by being moderate in their rents, and exacting no exorbitant fines upon the renewal of their leases; and in the latter, they made the most effective improvements by causing the woods to be cleared, the marshes to be drained, the commons to be cultivated, orchards, gardens,

women of lower station—had really no rank which she properly filled; and a convent was a retreat both honorable and agreeable, from the inutility and often want which attended her situation."—*Hist. of England*, vol. iv., p. 179.

* See Remarks on the Ecclesiastical Towers of Norfolk and Suffolk, in *Archæologia*, vol. 23, p. 14.

† The fierce *puritanism* of Mr. M'Crie here flashes broadly and most offensively upon many an episcopalian eye. John Knox himself, in his well-known exclamation "that the best way to keep the *rooks* from returning, was to pull down their nests," could not have more testified his intense hatred to the monastic institutions, than his worthy disciple in the following sarcastic paragraph:—"If the matter be viewed in this light, antiquarians have no reason to complain of the ravages of the reformers, who have left them much valuable remains and placed them in that very state which awakens in their minds the most lively sentiment of the sublime and beautiful, by reducing them to—*ruins*."—*Life of John Knox*, vol. i., p. 274.

‡ Collier, Wood, Hearne, Drake, Browne, Willis, and others of the class of Romanizing writers, are evidently too favourable to the monastic orders. But those who have heaped obloquy and opprobrium upon them, are compelled to allow that, in *almsgiving*, there was no deviation from the rule of life prescribed by their founders.

§ See Ellis's *Original Letters*, vol. ii., pp. 71, 77: vol. ii., p. 130, second series.

vineyards to be planted, and, by the operation of *chalking*,* they turned many a barren into a fruitful field. From these religious houses forming a sort of spiritual corporation throughout Europe, the general chapters of each order served as a canal to convey to the monks every improvement abroad or at home, by the means they afforded of a ready interchange of ideas. Under such circumstances it stands, therefore, to reason, that the superiority of the ecclesiastical chiefs over the lay possessors of land was as conspicuous as their qualifications for state employments.† This piece of justice we may render to these superiors of the old foundations without any risk, we suppose, of our protestant feelings and attachments being called in question—without our being suspected of the wish that we were now writing under the government of his holiness the pope, or bowing the knee at the shrine of St. Becket.

The accomplished scholar, the man of fine genius and generous spirit in his high exultation at the advanced state of knowledge, as he contemplates it under all the possible varieties of aspect, will readily acknowledge that monkery rendered this service in its day and generation,—it saved the remains of ancient authors from irretrievably perishing. The art of writing‡ preserved in the solitude of the cloister, reared as it were a wall of adamant around those remains, till the discovery of printing made their destruction impossible. And though the writings of the monkish historians, as they are contemptuously styled, do not exhibit specimens of the poetical history of Livy, or of the philosophical history of Tacitus, yet under a rude and slovenly exterior, they contain much curious information on the manners and opinions of their contemporaries im-

* This taunting observation of Peter of Blois, clearly indicates that some of them were more intent upon becoming nursing fathers of agriculture than of the church:—"Quæ utilitas quod *fimo et cretâ ager sationarius* impingatur, si in Dominicæ messis culturâ, nec spina evellitur nec extirpatur tribulus, nec verbum Domini seminatur."—*Petr. Blas.*, Ep. v.

† In part liv. of the *Penny Magazine*—article, Byland Abbey,—there are some very interesting and instructive remarks upon the monastic rulers, in their characters of proprietors of land.

‡ Contemporary and posthumous fame, as well as present fortune, became the reward of those whose pens supplied the fairest and most correct copies to their several monasteries. L'art de copier devint une source de fortune, de gloire même : on célébrait les monastères où se faissent les copies les plus exactes et les plus belles, et dans chaque monastère les moines qui excellaient à copier. L'abbaye de Fontenelle en particulier, et deux de ses moines, Ovon et Hardouin acquirent en ce genre une véritable renommée."—*Cours d'Histoire Moderne*, par M. Guizot, p. 356.

parted with a charm of simplicity, which is rarely to be found among the attractions of adorned writers ; while the Latin style of some of these chroniclers, for instance, that of John of Salisbury, Peter of Blois, Joseph of Exeter, and William of Malmsbury, frequently discloses all the nice and more delicate shades of that noble language. We must not also forget to observe, that several abbots and priors deserve the utmost praise for their encouragement of the fine arts, which, though they do not in themselves constitute virtue, yet greatly tend to promote it by shutting out idleness, the preparative for almost every vice. We read of the monks pursuing " painting, carving, graving, and the like exercises,"* with that degree of interest as if they had quite a passion for some of these objects.

It has been often said, that the monks had earned the hatred of the people by their avarice : but it is worthy of remark, that so long as the great monastic corporation existed, no legal provision for the sustentation of the poor was enforced,† and that not many years after the forfeiture of its revenues, the celebrated statute of the 5th of Elizabeth was passed. By satirists‡ and censurers, the monks have been represented as not allowing an income to the incumbents of their livings, adequate to the purposes of existence ; yet no law was deemed necessary for preventing the dilapidation of parsonages till the 13th of the same reign. Now, it must be conceded, that the monks were incredibly expensive in their passion for decorating their chapels to the occasional detriment of their country churches. Their immoderate love for the most elaborate ornaments of the chisel and the pencil in them may be acknowledged indefensible, and almost incurable. Still with no sort of truth or justice can it be said that they

* Lord Herbert's *Life and Reign of King Henry VIII.*, p. 186.

† *The Lincolnshire Remonstrance* (apud Speed, 1033), in reference to the evils resulting from the abolition of the monastic houses, notices that of the "poreality of the realm being thereby unrelieved." But though the compulsory system of parochial relief was established in Elizabeth's reign, yet the first act for the relief of the indigent poor was passed in 1535, (27, H. VIII., c. 25). According to Spelman, the bill for giving the king and his heirs all monastic establishments was not at all relished by the Commons, who were very backward in passing it till the imperious despotism of Henry was shown in the threat of striking off some of their heads if there was not a prompt obedience to the royal will.—See *Hist. and Fate of Sacrilege*, p. 183. Many in the House of Commons thought, naturally enough, that the forfeited revenues, instead of being appropriated to the benefit of the Crown, should revert to the representatives of the original founders.

‡ *Piers Plowman* is one of the satirists who attacks the monks on that score,—“of them, they have no pitie.”

ever tarnished their memories to all subsequent ages as the lay impropiators have done (would that the race were for ever extinct) by "pulling down the houses on an estate, in order that there might be no congregation, and then transforming the church into a straw barn,* because there was none." Truly a more execrable or effectual expedient for devising that the beams of divine light should not penetrate within those churches, cannot well be imagined. The advantages of competence unquestionably were not supplied by the monks to their vicar; "But now," remarks a writer of those times, "there is no vicar at all, but the farmer is vicar and parson altogether; and only an old cast-away monk or friar, which can scarcely say his mattins, is hired for twenty or thirty shillings, meat and drink, yea, in some places, for meat alone without any wages."†

The lean kine devoured the fleshy ones, and yet looked nothing the better for their meal. The spoilers of the church did themselves very little good with their booty. It is a curious statement of Sir Henry Spelman, about the year 1616, that on comparing the mansion houses of twenty-four families of gentlemen in Norfolk with as many monasteries, all standing together at the dissolution, and all lying within a ring of twelve miles the semi-diameter, he found the former still possessed by the lineal descendants of their original occupants in every instance, whilst the latter, with two exceptions only, had flung out their owners again and again, some six times over, none less than three, through sale, through default of issue, and very often through great and grievous disasters.‡ This work of pillage figures dreadfully also in the minds of other men who were no more heated enthusiasts—no more under the influence of fanatical infatuation—no more liable to the exaggerations and false conclusions of an excited imagination—than the grave and learned lawyer and antiquary just quoted. Archbishop Whitgift, in his address to Queen Elizabeth on this subject, observes—"It is a truth already become visible in many families that church land added to an ancient and just inheritance hath proved like a moth fretting a garment, and hath secretly consumed both.§ The firm-nerved and not unscrupulous Burleigh, when his own personal

* Strype, *Cranmer*, p. 412. See, also, the 8th chapter of Blunt's "*Sketch of the Reformation of England*," for an account of the dissolution of the monasteries, which is given with much force and judgment, and is the result of very considerable research.

† Kennet, *On Impropiations*, p. 161.

‡ *Hist. and Fate of Sacrilege*, p. 243.

§ *Eccle. Biog.*, vol. iv., p. 286.

aggrandizement was concerned, and who certainly had more of the Puritan than the Romanist in him, admonishes his future heir to beware how he meddled with church property; "for the curse of God will follow all them that meddle with such a thing that tends to the destruction of the most apostolical church upon earth."* And even Selden, "the chief of learned men reputed in this land," as Milton styles him, he whom no one will accuse of an excessive zeal for ecclesiastical rights, declares, in reference to the alienation of tithes, "It is a destruction for a man to devour what is consecrated."

Burnett, in the violence of his antipathy against the monastic establishments, has completely overlooked all the good points—if we may so express ourselves—the attractive properties about them. If we are to acquiesce in his opinion, we must believe that monachism was a system from which all virtues were excluded, and in which all vices were incorporated.† This assuredly is to form a very erroneous and partial view of the subject; since, if the purest part of religion be benevolence and charity to our fellow creatures, it cannot be doubted that in one sense these endowments stood linked with the favour of heaven. Pope Ganganelli, therefore, in our opinion, took a more comprehensive view of the matter in hand—manifested more liberal principles—than the protestant bishop, when he said, "The religious orders have not been gifted with infallibility nor with indefectibility. If they were all to be abolished this day the loss would be great, but the church would be neither less holy, less apostolical, nor less respectable."

While we join, then, with Burnett, in expressing our devout gratitude that this nation has snapped the chains of popery—still, never can our reformation be called complete, till the clergyman is enabled to exist upon the emoluments of a single benefice. Centuries have rolled away since the despoliation of the

* Kennet's *Impropriation*, p. 438.

† The preamble of 27 H. VIII., c. 28, which assigns the lesser monasteries to the king, sets forth the monstrous disorders that were found to exist in them. But no charge of misconduct is brought against the greater ones, in the edict which proclaims their downfall. This silence suggests a probable argument that their abolition was not the consequence of immorality or want of discipline; though that "good hater" of them, Burnett, has cited cases which, if not resting on vague and uncertain traditions, must be allowed to prove that "iniquity greatly abounded" in them. We must not forget that even Sanders admits that crimes were detected under the monkish cowl, though invention exaggerated them. "*Criminibus religiosum partim detectis, partim confictis.*"

monastic communities, yet we have lived to see that most effective defender of our branch of the church, Bishop Jewell, speak like a true prophet, in saying that the spirit of sacrilege which consigned the conventual revenues to the grasp of avaricious reformers and to the parasites of a court* instead of applying them to the erection of schools and to the furtherance of other religious objects, would be "a plague to posterity, the decay and dissolution of the church of God."†

The very name of plurality carries its condemnation with it. It is for lay-impropriators to remove a stigma which has been so long and so unjustly fastened upon the church through their means, and which has been a constant source of regret to her friends, and of calumnious invectives to her enemies. Papistical Mary, be it remembered to her infinite honour, restored, from conscientious motives, the abbey lands which had been attached to the crown, and with them the first-fruits and tenths; and when her unprincipled courtiers, with a view to frighten her out of this intention, told her that, if such was her will and pleasure, she would impair the dig-

* Had those, whose fervent but mistaken piety founded these conventual houses, been permitted to revisit the earth about the middle of the sixteenth century, with what affright, horror, and amazement would they have seen the glut of wealth poured into the royal exchequer by their suppression, dissipated in such a manner as would have puzzled them to determine whether the reigning prince exhibited, in the disposal of his newly-acquired treasures, the character of the spendthrift, the gamester, the madman, or the profaner of holy things. From authentic documents, we learn that Henry made a grant of a religious house to one who had the good fortune to please his palate with a savoury dish of puddings; to Sir Miles Partridge he lost a fine ring of bells by a single throw of the dice; while to him whose office it was to set the royal chair at a convenient distance from the fire, the gift or lease of abbey-lands was granted.—See Fuller, b. vi., p. 336, 337; *Hist. of Abbays*, p. 335. According to that vehement reformer, Bale, a great part of the monastic treasure was turned by Henry "to the upholding of dice-playing, masquing, and banquetting," "yea," he adds, "(I would I could not by just occasion speak it), bribing, whoring, and swearing."—Bale, apud Strype, vol. i., p. 361.

† In the memorable sermon preached by this illustrious divine before Elizabeth and her Court, in which he so courageously denounces and exposes the ruinous impropriations and other shameful abuses of church-property, after observing that a gentleman *cannot keep house* unless he have a *parsonage or two in farm in his possession*, he then exclaims, "O, merciful God! whereto will this grow at last. If the misery which this plague worketh would reach to but one age, it were tolerable: but it will be a plague to the posterity—it will be the decay and desolation of God's church."—Jewell's Works, edit. 1611, Sermon. iii., p. 191, 192.

nity of the crown, the sturdy and honest bigot replied that she valued her salvation more than ten kingdoms. And it is evident from the following passage in Burnett that great apprehensions were entertained lest the queen, in the plenitude of her benevolence and justice, should prescribe to her subjects a similar course of proceeding, though it can scarcely be doubted that nothing short of an irresistible necessity would have led them to submit. "On the 23rd of November, the bill for suppressing the first fruits and tenths, and the resigning up all impropriations that were yet in the Queen's gift to the church, to be disposed of as the legate pleased for the relief of the clergy, was brought into the house. It was once thought fit to have the surrender of impropriations left out; for it was said the queen might do that as well by letters patent, and if it were put in the bill it would raise great jealousies, since it would be understood that the queen did expect that her subjects should follow her example."* Now, beyond all controversy, it would be reaching at once the summit of what is most absurd in conception—it would be making the closest approximation in point of rationality to an inmate of Bedlam—to entertain for a moment the supposition, that any lay impropriator of these days would be, like Mary, influenced, "by compunctious visitings", to restore to the church the things which were once hers.

"No: all is lost!—the earth where abbeys stood
Is layman's land, the glebe, the stream, the wood."

Such an occurrence would, indeed, be just as likely to happen as that Norwich should ever again have *sixty* parish churches for a population of *six thousand souls*.† But when the interests of religion so materially suffer by the church having been shorn of her patrimony‡

* *Hist. of the Reformation*, vol. ii. p. 647.

† The Subsidy Roll of 51 Edward III., which contains a return of all lay persons, male and female, above fourteen years of age, (real mendicants excepted), all of whom were subjected by a statute of that year to a poll tax of a groat, has brought the above extraordinary fact to light.—"Observations" by Henry Hallam "on a Communication made to him by Sir Francis Palgrave, respecting the population of certain districts in Wiltshire, Essex, and Kent, in the time of Henry VIII."—See *Proceedings of the Statistical Society of London*, vol. i., 1835-1836, No. 3, p. 90.

‡ Those who are disposed to indulge in their "*railing accusations*" against the church, on the score of her imputed wealth would do well to ponder on these memorable words of Lord Bacon:—"All the parliaments, since the 27th and 31st of Henry VIII., who gave away impropriations from the church, seem to stand in a sort obnoxious and obliged to God, in conscience,

—by her revenues being so secularized—surely, surely it is the duty of every lay impropiator to do his utmost to remedy the substantial evil here complained of, by a cordial co-operation with those of their class who are promoting the public weal in the erection of district churches* on their estates; and thus trying to erase the foul and ugly spot which tarnishes the family escutcheon, characterized by the name of church spoliation. Let them remove, then, as far as lies in their power, what is so grievously injurious to the cause of true religion, and a future age will forget, in their christian virtues and charities, the sacrilegious purloinings of their forefathers. Let them, we say, give ear to their king's letter, and multiply, according to their respective means, churches and chapels, which are the glory of the land—the greatest instruments of internal tranquillity—the firmest and cheapest defences against the outbreaks of an unchristian population—the most sure and certain antidote to a country's ruin. Let them so signalize themselves, and they will render these accusatory complaints, now apposite and cogent, not only ill-timed and ill-judged, but positively uncharitable. “The lay impropiators are indeed the principal cause of the straitened circumstances in which so many of the English clergy pass

to do somewhat for the church, to reduce the patrimony thereof to a competence. For since they have debarred Christ's wife of a great part of her dowry, it were reason they made her a competent jointure.” It is a constitution of the divine law, from which human laws cannot derogate, that those which feed the flock should live of the flock—that those which serve at the altar should live of the altar—that those which dispense spiritual things should reap spiritual things; of which it is also an appendix, that the proportion of the maintenance be not small or necessitous, but plentiful and liberal.”

* At the bare mention of District Churches, what mortal being is there, who longs for the christian education of the people and the promotion of Christ's kingdom, that does not feel his pulse quicken with tumultuous throbs of admiration at the glorious manner in which so many among the opulent of the clergy have responded to the public appeal of the Bishop of London to aid his design of erecting fifty new district churches in the Metropolis, to stop the moral pestilence which infects its countless bye-streets and alleys, by bringing their densely crowded population to the true knowledge of the true God. It would be singular then, indeed, if this eagerness on the part of the clergy to honour the Lord with a portion of their substance, should not find many imitators among the noble and wealthy of the laity. And when this high and holy enterprise shall be accomplished, where is the man, whose heart is in its right place, that will not say with us, that this great Bishop of our church has not only served his own generation, by calling these religious fabrics into existence, but levied a tax of admiration and gratitude upon a future one.

their lives. To the same source must also be traced the pluralities, non-residence, and scanty provision for unbeneficed ministers, which furnish the envious, the ill-informed, and the malignant adversaries of our church establishment with a never-failing supply of specious topics for illiberal declamation.”*

But, according to the judgment of many, these emphatic censures lose half their force by the putting of this single question. What would have become of your established church, if there had been no Lay Impropriators in the Houses of Lords and Commons to protect it? Our answer is, if this species of temporal corporation is to be its strength of guardianship—if it is to exist only by such wills and agencies—if this is to be its transcendent element of safety—then, we fear not to say, better, far better, it should fall into ruins around us—be demolished entirely. We would not put forth a finger to uphold a religious system, “*upon the mere ground of maintaining property.*” Those who are inclined to place worldly on a level with religious considerations, may reject these opinions for their injudiciousness and extravagance, and as repugnant even to the notions of all high churchmen. They are, however, fully shared—they are potently confirmed by a writer, whose orthodoxy stands forth so prominently in his productions, that to hint a suspicion against it, would as much expose the person to the imputation of being bereft of sense, as if he were to advance this unqualified position, that Howard was no philanthropist, or Burke no orator. These are his striking and weighty words; and with them we shall bring our remarks to a close. “I had rather the church were levelled to the ground by a nation really, honestly, and seriously thinking they did God service in doing so, (great as the sin would be,) than that it should be upheld on the mere ground of maintaining property; for I think this a much greater sin. I think that the worshippers of Mammon will be in worse case before Christ’s judgment seat than the mistaken zealot. If a man must be one or the other (though he ought to be neither), but if I must choose for him, I had rather he should be Saul raging like a wild beast against the church, than Gallio caring for none of these things, or Demas loving the present world, or Simeon trafficking with sacred gifts, or Ananias grudging Christ his substance, and seeking to be saved as cheaply as possible.”†

* Soames’ *History of the Reformation*, vol. ii, p. 296.

† Newman’s *Parochial Sermons*, vol. iii., p. 232.

OBSERVATIONS ON THE NOMENCLATURE OF
NEVILLE WOOD'S "BRITISH SONG BIRDS."

It was the intention of Mr. Neville Wood to have prefixed an Introduction to his recently published *British Song Birds*, containing, amongst other matters, a discourse on the nomenclature adopted in the work; but as many circumstances conspired to prevent his effecting this object, and as several of his friends have expressed their regret at this omission, we propose to supply the deficiency in the present number of the *Analyst*. Before proceeding further, it may be as well to mention that the plan, so often alluded to in previous numbers, of allotting an English generic and specific appellation to each species, has been observed throughout. We now proceed to give our reasons for the alterations in nomenclature which occur in various parts of the book; of course passing over without comment such designations as remain unchanged.

To commence, then, with the "Song Thrush," or "Throstle," of most authors. This name would seem to imply that this bird was the only species in the genus which sings; but as the Missel Thrush warbles melodiously, and both the Field and Redwing Thrushes have a song, it is obviously incorrect. *Garden Thrush* appears to us to be exclusive, at least as far as regards British birds, which, on the present occasion, will alone occupy our attention.—*Garden Thrush*, *Turdus hortensis*.

Field Thrush, which is adopted in the *Song Birds*, is not exclusive, as it would apply equally well to the Redwing Thrush, but it must remain until a better occurs.

Garden Ouzel is employed instead of Black Ouzel; there being two British Ouzels (*Merula*), both black.

Tree Redstart might perhaps admit of improvement, but it is used, provisionally, instead of *Common*—the most vague and unsatisfactory term ever introduced into scientific nomenclature.—*Tree Redstart*, *Phaenicura albifrons*, Blyth.

The next species is designated, after other Ornithologists, *Tithys Redstart*, *Phaenicura Tithys*; but *Tithys* appears to be a mere fanciful name, and we propose to substitute in its stead *Blackthroated Redstart*, *Ph. nigricollis* (S. D. W.), the application of which is too obvious to require any comment from us.

The third species usually considered a Redstart, has been separated from that genus by Mr. Blyth, and termed the *Bluethroated*

Fantail, *Pandicilla cyaneacula*—names which, in our opinion, scarce admit of an objection. This is the *Phænicura Suecica* of Selby.

The species termed by Mr. Wood the "Sibilous Brakehopper" (vulgarly Grasshopper Warbler), we now prefer designating the *Sibilous Locustell* (*Locustella sibilatrix*), as being more euphonious, and consequently more likely to be adopted by the fastidious. Grasshopper Warbler we reject as transgressing the rule laid down on the outset, that each genus should possess an English name exclusively its own.—Selby includes this bird in the genus *Salicaria*; but, although it has a close affinity to that genus, its comparatively long hind claw at once separates it from the Reedlings. Its haunts and habits are, moreover, entirely different.

The members of the genus *Salicaria* are, even by Ornithologists, indifferently termed Wrens or Warblers; but this is an outrage upon the principles of science, and we see no objection to naming these birds *Reedlings*. Sedge Reedling (*S. phragmitis*, Selby), and Marsh Reedling (*S. arundinacea*, Selby), point out, with sufficient accuracy, the respective localities to which the species are most partial. Fen Reedling has been proposed for the last-named bird; but as the alteration is extremely slight, it is not worth while adopting, even supposing it to be an improvement.

Brake Nightingale has been used provisionally. *Brake* is not here employed in the botanical sense of the word, to denote the *Pteris aquilina*, but in the common meaning. *Song* and *Red-tailed* Nightingale have been proposed, but neither of them are sufficiently exclusive; and the practised Ornithologist must be fully aware of the difficulty of selecting any specific appellation that would not be subject to numerous objections.

Mr. Wood adopts Fauvet and *Ficedula* for the frugivorous division of the *Sylviadæ*, instead of confusing these birds under the names of Warbler and Whitethroat. Garden Fauvet (*F. hortensis*), Blackcap Fauvet (*F. atricapilla*), Whitethroated Fauvet (*F. cinerea*), Whitebreasted Fauvet (*F. garrula*). The latter is called the *Garrulous* Fauvet in the *Song Birds*; we conceive, however, that its Whitethroated congener would be about a match for it in garrulity, and, therefore, now prefer calling it the *White-breasted* Fauvet, as proposed by Mr. Blyth.

Redeyed Whinling. This is given instead of Dartford Warbler, so called because the bird was first met with in England near Dartford: it has, however, since been known to occur in many other localities, and the term is, accordingly, objectionable. *Whinling* is

derived from the whins which it frequents. Whether or not *Red-eyed* forms a good specific appellation, can only be determined when other species of *Melizophilus* are discovered. At present it appears, as far as we can judge, to be the best of the names that have been given to it.

Warbler belongs to what are popularly termed "Willow Wrens," as being the typical group of the family, *Sylviadæ*. The British species are, the Hedge Warbler (*Sylvia loquax*), the Wood Warbler (*S. sibilatrix*), and the Willow Warbler (*S. melodia*). The first of these has been supposed not to frequent hedges so commonly as mentioned by Mr. Wood; and, be this as it may, *Dark-legged* would afford a far more exclusive distinctive appellation.

Golden-crowned Kinglet. As no objection has ever been made to the Latin name *Regulus*, this has been anglicised into *Kinglet*, in order to avoid calling the birds of this genus Wrens, which is manifestly improper.

Ivy Wren. This species is termed *Ivy Wren* on account of its partiality for that plant as a site for its nest, and not, as some have imagined, because it feeds, or is supposed to feed, on ivy berries. It often nestles in ivy-clad walls.

Garden Tit is substituted for the more generally known name Great Tit, the adjectives *great*, *little*, &c., being liable at any time to become erroneous, from the discovery of species superior or inferior in size to the individuals so designated. We would by no means be understood to say that the bird under consideration is the only British Tit that frequents gardens; but it is certainly more frequently seen in such situations than the others. Perhaps, however, the name admits of improvement. Garden Tit, *Parus hortensis*.

Bearded Pinnock. The characters of the Bearded Tit of the older Ornithologists, differ so greatly from those of the other *Pari*, that it has been ranged in a genus by itself. This genus is now called *Pinnock*, which may either be understood to have allusion to the shape of the tail of the bird, or it may be supposed to have no derivative meaning. We rather lean to the latter supposition, considering with Dr. Lindley, that unmeaning names are always the best for generic appellations.

Hedge Dunnock. Commonly known under the name Hedge Sparrow. Ornithologically speaking, however, it is no Sparrow (*Passer*). *Dunnock* is derived from the dun colour of the bird, and is a name by which the species has long been known, in various

parts of Britain. Many instances have come to our knowledge of the House Sparrow and Hedge Dunnock being confounded as one and the same bird; and not alone by cocknies, but by individuals who had passed the greater part of their lives in the country. We conceive that we have said enough to convince our readers of the evil of continuing to describe *Accentor modularis* as the "Hedge Sparrow." This bird is the Hedge Accentor of some authors, but we think it advisable to give strictly English names, and those which are well known, in every possible case.

The Alpine Warbler of Latham and others, included in Cuvier's genus *Accentor*, has since been ranked in a separate genus, for which *Annet* (an unmeaning and consequently an unobjectionable term) has been proposed. Alpine Annet, *Curruca collaris*. *Curruca* has been applied to many genera by different authors; but it suits none so well as the Annet, which is a ground bird.

Linneus called the Pied Wagtail *Molacilla alba*; a better designation would perhaps have been *M. nigra*! but we shall prefer the golden mean, and, steering a middle course, name it *M. maculosa*.

The Grey Wagtail should be called *M. cinerea* (Will.), as having been given long before *M. boarula* (Linn.).

The Yellow Wagtail of authors was very properly removed, by the illustrious Cuvier, to the genus *Budytes*, for which *Oatear* is adopted in English. It is also called oat-seed bird provincially. Spring Oatear, *Budytes verna*, Cuv. Sufficient reasons are adduced in the *Song Birds*, for terming the Blue-headed Oatear *B. cyanocephala*, instead of *B. neglecta*. They need not, therefore, be repeated here. *Oatear* is derived from the localities which the bird frequents in those parts where it is migratory.

Lavrock is a provincial name for the Sky Lark; but as the genus *Corydalla* of Vigors is in want of an English name, why should it not be Tawny Lavrock, *C. fusca*. It is sometimes named *C. Richardi*; but it appears to us fanciful and unscientific to name an object in Natural History after an individual with whom it has no connection whatever, either direct or remote. It is no more an exclusive designation than Wagtail or Warbler, with which it is equally applicable. The name is not likely to cause confusion, and may therefore stand for *Corydalla*.

The Snow Bunting (*Plectrophanes nivalis*) is properly called the Snowy Longspur, and the other species the Rusty Longspur (*P. Lapponica*). *Longspur* originated, we believe, with Prince C. L. Bonaparte.

Chaffinch should be written as two words, thus—Chaff Finch,

otherwise a specific name must be added. *Sky Lark*, *Wood Lark*, &c., are often written as single words, but equally erroneously.

Willughby's name, *Fringilla montana*, should be adopted instead of *F. montifringilla* (Linn.), both on the score of priority, and as omitting the useless repetition contained in the latter. We may here observe that this truly great Naturalist (Linneus) was too fond of substituting his own names for those which had long since been established by Gesner, Aldrovand, Willughby, &c. ; and his alterations were often far from being improvements.

Carduelis elegans we have described as the Common Goldwing ; *C. spinus* as the Siskin Goldwing. To call the genus *Goldfinch* would be improper, as these birds are not Finches ; and we are of opinion that a name appropriated to one genus should not be applied to any other under any combination whatsoever. *Common* is the best appellation we can find for *Carduelis elegans*. Indeed, as far as regards British birds, the name could not be improved ; but as the genus contains other species besides those found in this country, we should be happy to have a better suggested.

We have substituted Whin Linnet for Common or Brown Linnet, neither of the latter being by any means exclusive, as must be apparent to every one at all acquainted with the other Linnets. This species is constantly met with amongst whin bushes, which can be said of none of the others. This bird has been called the Garden Linnet ; but it only frequents gardens during the breeding season ; and even then in much fewer numbers than it all times occurs on furze commons.

Selby gives the specific appellation *vulgaris* to the Haw Grosbeak ; but as the bird happens to be *rare* in Britain, we have translated the English name into Latin. *Coccothraustes crategus*, Blyth, so called from the favourite food of the bird at one season of the year.

We rather doubt whether *Pippin* Crossbill, adopted in the *Song Birds*, is an improvement on *Common* Crossbill. Neither of them are exclusive, and we must look out for better names.

Pine Grosbeak we render *Pine Thickbill*. The meaning of both is the same, but *Grosbeak* is already engaged for *Coccothraustes*. There are, doubtless, many birds with much thicker bills than the *Pine Thickbill* ; but if this objection be levelled at the present appellation, most assuredly a similar one will be equally applicable to *Grosbeak*, *Redbreast*, and a dozen others.

Our *Hedge Coalhood* is the *Bullfinch* of other Ornithologists. The latter is equally erroneous with *Goldfinch*. The new

generic name, as applied to the British species, is remarkably obvious ; but as there are species of *Pyrrhula* without black heads, it is probable that the name will not stand. Our native Coalhood is chiefly seen about hedges at that season of the year when it is most open to popular observation.

Spotted and *varius* are infinitely superior distinctive designations to *Common* and *vulgaris* for the Starling ; and, so far as we are at present aware, they are sufficiently exclusive.

On perusing a critique on Hewitson's *British Oology*, by Mr. Blyth, we perceive the name *Willet* is proposed for the genus *Budytes*. This surpasses our own *Oatear*, as having no derivative meaning, and being sufficiently euphonious. The species will then stand thus :—Spring Willet, *Budytes verna*, and Blue-headed Willet, *B. cyanocephala*.

Here our task closes ; and we flatter ourselves that we have adduced sufficiently cogent reasons for the alterations which it has been deemed fit to introduce into the *British Song Birds*. English nomenclature is, however, still in a very unsettled state ; and much remains to be done before we can arrive at anything like perfection. We are fully aware that our labours in this department will be little appreciated by many anti-reforming Naturalists, although we have no doubt but the change will take place some time, even though it be by slow degrees. What improvement is there that has not met with violent opposition on its first appearance before the public ? It is notorious that all the grandest inventions of the human mind have been looked upon, by the leading men of the time at which they were proposed, as the impositions of quacks, or the delusions of fanatics. If such be the reception of the theory of the circulation of the blood, of vaccination, of phrenology, &c., what can we expect for our proposals for a reformed Nomenclature in Natural Science ? Why, that they will undergo the usual routine of being ridiculed, scoffed at, and abused by all parties, and *then* by slow degrees begin to be approved, and at length adopted. Thus much for the nomenclature of *British Song Birds*, which, though defective, as we have seen, in many points, is manifestly a great improvement in this particular on any work hitherto published in the English language. It only remains for us to observe that the author of the book in question is far from addicted to coining new names, those he has adopted having been, for the most part, published elsewhere.

HARD WORDS.

"*Polonius*.—What do you read, my Lord?

"*Hamlet*.—Words, words, words."

"*STYLE*.—Proper words in proper places."—*Swift*.

"*Nugis addere pondus*."—*Epist. xix., Hor.*

WE are told that the ancient Pythia poured forth their prophetic rhapsodies in short and abrupt sentences—their words scarcely articulated, and often unintelligible. I have often thought that our language resembles the Latin in its force and character, though more diffuse in its construction: the Roman being rudely engrafted upon our native trunk, produced a hybrid, which thus partakes of qualities of both; thus our minds have received a sternness and dignity, so contradistinguished from the versatile character of prætorian France, and which uniting with the boldness of our barbaric fathers, we thus stand out as insular in our character as the land to which we belong.

Being an inquisitive old man, the reader will not be surprised to find that I am apt to *generalize* from very small *particulars*. I have ever been inclined to speculation; and I think, as "small openings show wide prospects," a trifling *fact* may involve high *moral* truths; and that an idle speculation may, like the impalpable carbon, be resolvable into discoveries of incalculable worth. I hope, therefore, the reader will excuse the eccentricity of my thoughts, and not set me down as a mere dreamer and enthusiast, since the conduct of either is unbecoming to one of my years.

Coming back to my first remark on the character of the Pythia, or Grecian diviners, I am bold to think that our language is not the only hybrid which we owe to the ancients, that we also resemble them in our ideas and opinions; among which is our national enmity to "hard words:" "*insolens verbum tanquam scopulum evitare*." "Avoid a hard word as you would a rock," said Cæsar, and verily we sail so far from Scylla's mouth that we founder on Charybdis,—*Dum brevis esse laboro obscurus fio*; for while I labour to be concise I become obscure. It is a *self-evident* truth of many profound philosophers that words are the images of thoughts,

the *animi umbra*—shadows of the mind ; deriving so many of our words from the ancients may, in some manner, account for that republican sternness of mind with which the English seem to be possessed ; but, leaving the examination of moral similitude, I shall merely touch on the resemblance between us and the Pythia, whom we find were systematic cheats cunningly reposing on the credulity of a superstitious people rather than expose their prophecies to too strict an examination. I know not from what particular cause it is that the same obscurity occurs with us of modern times, not in our religious teachings, but in our most ordinary conversation. I can understand the merit of circumvention when necessary ; the counsellor who perplexes in the extreme, may be pardoned—it is his vocation ; the shopkeeper may overreach you—it is his interest ; sophistry may become a virtue, and cunning an accomplishment ; but why, in the name of common sense, our youth should, at all times, exercise the same deception of speech, is to me a matter of surprise. Is it that their thoughts are so misbegotten that they are not worthy the dressing ? or is it the policy of the courtier—*qui nescit dissimulare nescit regnare vel vivere*—compels them to practise cunning by a necessity ? Being in company with several persons of good breeding and respectability, where the subjects of politics, poetry, and religion, succeeded each other, but by what connection I know not, I was both surprised and hurt to hear the awful mysteries of our *faith* commented on in the same canting, frivolous style as politics, while poetry drew forth no higher expressions than we might hear in Smithfield or on 'Change : there was no warmth of feeling, no power of illustration, and yet, judging from the bright, quickening eyes of two or three of the party, I could not but suspect and hope that there was a deep under-running current of poetic feeling, but which, with infinite zeal, they kept down, and that the fire of the muses and the fire of the altar equally burned in their bosoms, though extinguished by their weak and deadening tones. Yet this was not the only peculiarity of their conversation ; their ideas, though seemingly good, arrayed in a congestion of vile monosyllabic words, and slurred out with the most trifling indifference, brought them into such confusion and disproportion that I was often puzzled to discover any meaning at all.

"Sometimes to sense, sometimes to nonsense, leaning,
But always blundering round about their meaning."

Though an old man, and—kind reader, excuse me—not altoge

ther an unlearned one, I was some time before I could discover the reason of this obfuscation of ideas ; when one of my gentlemen, slipping his guard, and using a trisyllable, excused himself with this strange parenthesis—"as Dr. Johnson would say." Believe me, good reader, I was never more taken to ; for I feared I might myself have committed the same error, and that with the disadvantage of not having acknowledged it, and thus brought my grey hairs into contempt ; for it is too often the case that ignorance aggravates a fault. What I am anxious to discover, is, the cause of such a strange discipline ; for I must roundly confess I cannot see the advantage of concealment where they were neither driving a bargain nor selling an opinion. Whether this disposition to conceal our meaning is of Grecian, Roman, or barbaric origin, it is certain that superstition is alike in her monstrous deformity in every clime ; and thus this national diathesis may be derived rather from the Druids than the Pythia : but I leave this learned inquiry to the researches of the curious in antiquities.

The evil, whatever be its origin, is ratified by custom. Every rule implies restriction, otherwise it degenerates into tyranny. Thus the Latin ediction has grown into a corruption of no trifling magnitude, and, what is worse, is established by time and confirmed by prejudice.

The fear of "hard words" is the direct tax of ignorance, instituted by her despotism, as a premium for indolence. It is no wonder, therefore, that we blush at our own words ; and thus a mind naturally born to eminence is subjected to the common level, else pursued by the baleful and biting taunts of the invidious, in which discordant pæan, spirits of a better mould are forced to join. Yet, with all this predisposition and idiosyncrasy for garbage, how sensible are we of the contrary. Our language is susceptible of the highest powers of eloquence. With what an instantaneousness, with what an electrical rapidity, does a full-toned mastering word strike upon the soul ! echoing through her most intricate labyrinths and awaking a thousand reflections. Words are as the keys of the instrument to the composer ; and to govern them with skill requires familiarity. The sublimest apprehension may be degraded to the ridiculous, as the highest effort of a Cimarosa may be lost in the discord of an awkward performer.*

* " 'Will you play upon this pipe,' says Hamlet to Guildenstern. 'My Lord, I cannot, I know no touch of it,' replies the courtier. 'Tis as easy as lying,' retorts the satirical prince ; 'govern these ventages with your fingers

Shakspeare, whose acquirements must have been very limited, was, notwithstanding, a profound English linguist. What a just

and thumb : give it breath with your mouth and it will discourse most eloquent music : look you, these are the stops.'—'But these cannot I command to any utterance of harmony; I have not the skill,' replies Guildenstern.—It is a small thing, the fiddle is a genuine Cremona and the warranted workmanship of Stradivarius; every hand that draws a bow across it will produce every note unlike every other performer according to his skill in fingering, and the 'music in his soul'—from the harsh scraping of some blind crowder in the streets to the tones of anguish or extacy which Paganini, with touches like the first beams of sunlight on the statue of Memnon, elicits from the strings; or extorts when he strikes and *they shriek* as though he were putting live sufferers to the sword.*—What the pipe and the viol are to the minstrel, language is to the poet. With the thousand varied tones which the "great masters of the art" have scattered with profusion before us—either in the sweet Eden of verse or the wide universe of prose—there are thousands of modulations yet unproduced. What great master shall next bring a few more of them forth with equal conspicuity. But why should a privilege belong to an individual which is accessible to every one who can and will learn to appreciate its value. What is worth doing is worth doing well. Language is at once the rule of gradation in society, and which asserts its claim to equality; and if all cannot create, all can acquire and apply; a word is the portraiture of thought, and like the offspring in whom we behold the features of the parent. No one, perhaps, possessed such a despotic sway over language as Byron, who multiplied thoughts by words which to him were the hieroglyphics of nature, and represented every object in the sound rather than in the thought. In the storm on the lake of Geneva he thus breaks out—

"Sky, mountains, rivers, winds, lake, lightnings ! ye
With night, and clouds, and thunder, and a soul
To make these felt and feeling ;—the far roll
Of your departing voices is the knell
Of what in me is sleepless—if I rest.
Could I embody and unbosom now
That which is most within me—could I wreak
My thoughts upon expression, and thus throw
Soul, heart, mind, passions, feelings strong or weak,
All that I would have sought and all I seek,
Bear, know, feel and yet breathe,—into one word—
And that one word were *lightning*, I would speak !
But as it is I live and die unheard
With a most voiceless thought, sheathing it as a sword."

This multitude of words are individually personifications that crowd on each other with such a startling rapidity that they leave nothing distinctive in the mind but the charm of the sensation. With all his power of expression his "thought was voiceless," and so will be the thoughts of others until they strike the chords with a master hand. Pygmalion long gazed on the marble before it suspired—moulded into beauty, it quickened into life. Language is the body and statue of thought, the wings of the soul; and while some ascend with an eagle's flight, others pursue their middle and lower course.

* Montgomery.

appropriation of sound to sense—so harmonious and yet so contrasted—to snatch from his *Macbeth* an unpremeditated passage, the soliloquy !—

“ This Duncan
Hath borne his faculties so meek, hath been
So clear in his great office, that his virtues
Will plead like angels, trumpet-tongued, against
The deep damnation of his taking-off.”

How the tones rise and fall, subsiding into softness or rising into abrupt vehemence ! “ Faculties so meek ! ”—What a faintness, fondness of expression ! “ Clear in his great office ! ”—What an extension of meaning this involves ! rising to the climax “ His virtues will plead like angels trumpet-tongued ! ” The effect here is two-fold, first, by the comparison of his mild virtues with their powerful agency, that will plead like angels trumpet-tongued, with voice so clamorous ; and secondly, the vibration of the word trumpet with the alliteration, which is very forcible ; those affections, so kind and tender, will cry out

“ Against
The deep damnation of his taking off:
And pity, like a naked new-born babe,
Striding the blast, or heaven's cherubin, hors'd
Upon the sightless couriers of the air,
Shall blow the horrid deed in every eye,
That tears shall drown the wind.”

What a grandeur there is in the full diapason of this sentence,

“ And pity, like a naked new-born babe,”*

glancing with the velocity of light, with the wild vehemence of the blast. Shakspeare's are indeed “ winged words.”

The “ *ἰστία ἀνθρώπου* ” of the Greeks is a noble expression ; they must have been finely sensible of verbal effect. The Greek drama, especially the tragedies of Æschylus, are the verisimilitude of Shakspeare in the inflection, power, and variety of expression.

* Not such a babe as Rubens painted, that looks cut out of a huge barm dumpling, thick and spongy ; but like the Infant John of Murillo, whose form of life and loveliness is the emblem of every virtue consummate in innocence, every colour blending into one, unsullied and pure. Such was Shakspeare's personification of pity, the tearful herald of grief.

Let me pause a moment before the awful genius of Milton,

"That with no middle flight intends to soar
Above the Ionian mount."

Though the *subject* be linked to our earliest and most sacred associations, though the cadence be majestic and the thoughts divine, the language is felt as peculiar and essential. James Montgomery, in his eloquent *Lectures on Poetry*, remarks—"Thus, nothing can be less adorned than the opening of *Paradise Lost*; the cadence of the verse alone redeems the whole from being plain prose in the first six lines, but thenceforward it rises through every clause in energy and grandeur, till the reader feels himself carried away by the impetuosity of that adventurous song. In the proposition the language is colloquial, but, rising to the invocation of the Deity, how ponderous the tones become!

———— "Thou from the first
Wast present, and with mighty wings outspread,
Dove-like, sat'st brooding on the vast abyss,
And mad'st it pregnant," &c.

Now let any man attempt to tell to another the subject of Milton's exordium; this he might do, and correctly enough, but it would be no more like Milton than "I to Hercules:" the word is the body to the thought, and cannot be separated without death. The eloquent Hazlitt says—"Words are the only things that last for ever." "Nor is this merely a splendid saying," writes Montgomery, "or a startling paradox that may be qualified, by explanation, into common-place; it is literally true." Art and science decline in the succession of ages, and nothing remains but their verbal commemoration. "The cloud-capt towers, the gorgeous palaces, the solemn temples," like "the baseless fabric of a vision," will "leave not a wreck behind," save the history of their existence.

Such are words, born of, and co-existent with, time! By their magic inspiration immortality is given to truth, and though dead we still live in the perpetuity of our thoughts—the first, last symbol of the soul. Shall we look into Johnson, surnamed the Grallatore, Swift, Burke, Addison, Goldsmith—

"Eloquent as is Apollo's lute;"

or examine the immortal works of Taylor, Milton, Luther, that

ponderous soul, the eloquent Melancthon, the acute Erasmus, or the prose of the divine Petrarch, whose "words are as deep waters," wherein the concord of sound and sense are beautifully preserved. If we examine into the rise and progression of language, we shall find that words proceed from two sources ; first by *creation*—that is a reciprocity of sound with such as is created by external objects, and which the Greeks termed *ονοματοποιεα*—onomatopœia—such as the words, crash, dash, hiss, grunt, grunntus porcorum, tinnitus æris, or *πολυφλοισβοι θαλασσης*—the many sounding ocean—the sound being an echo to the meaning ; and, secondly, derivatives from other languages in the universal Babel. Creation begins and almost ceases with the origin of language—derivation perfects it. If we examine our own tongue, how much has it been enriched of late years by the appropriation of words originally applied to the sciences, but now become colloquial terms.* Thus every new word, especially if a synonyme, gives facility to our ideas, and with the immense advantage of variety of form, perhaps the most essential distinction in modern literature ; for, as our modern Horace justly remarks—

"True wit is nature to advantage dress'd ;
What oft was thought, but ne'er so well express'd.

Verbal affluence depends less upon a knowledge of primary words than of compounds and synonyms. A very few sounds are adequate to express our mere wants, or even general ideas ; but to ring the changes of thoughts in its myriaded shades, its degrees and associations, requires not only the full tone but its sixteenths.† In my frequent country ramblings, I have often amused myself with thus dallying with words—turning them into every possible change and inflection—and not unfrequently have been startled by the apparition of a thought at once pronounced from obscurity to light. I have pursued these configurations until the labour has been forgotten in the excitement, whilst thought rushed on thought without effort or solicitation, carried forward by successive propulsion, until my arteries have quickened, and my mind glowed with a new inspiration. The forms of things unknown are bodied forth in sounds ; and if the glory of thought be unequally possessed, clearness and perspicuity of style will add importance even to trifles.

* As amalgamation, exacerbation, diathesis, disruption, plethoric, homogenous, &c.

† It is related of the sublime Mozart that he could detect the sixteenth of a tone.

Shall I say more in apology for "hard words"—or what can be argued against me? If my Cæsars oppose me, let them find safety in their accustomed obscurity, or, I fear me, their feeble pleadings, like the shades which opposed the progress of Ulysses—"decensus averni"—will be too filmy to strike, and too helpless to be hurtful; otherwise the evil will be perpetuated, and we shall soon be reduced to mere affirmation and negation—the "affecting *fantasticoes*" and "*pardonnez moi's*" of our contiguants—or, like the Turks, make more use of our hands than our tongues, and sacrifice our brains to a lower and more unworthy officer of the physical commonweal.

Considering how repeatedly we use comparison in writing, and especially in conversation, to give variety and force to our thoughts and descriptions, an aptitude for antithesis is very important, thus opposing our words in their numerous shades; as familiarity without coarseness, dignity without pride, sternness without cruelty, cheerfulness without frivolity, decision without stubbornness, submission without servility, &c. By such contrasts our meaning is essentially defined, and our thoughts strongly expressed. I know of no book which would tend to improve our knowledge of language so much as a lexicon of antinonyms, wherein every susceptible word should be contrasted with its opponent, and illustrated with quotations from ancient and modern authors. By this means we should acquire that facility in writing and speaking in which the generality of persons, even well educated, are now so remarkably deficient.

PHILLOLOGOS.

THE FISHES (PISCES) OF BRITAIN, SYSTEMATICALLY ARRANGED.

Of the five classes into which vertebrated animals are divided, the four first, namely, beasts or mammals (*mammalia*), birds (*aves*), reptiles (*reptilia*), and amfibians* (*amfibia*), having

* We do not ourselves countenance the changes, advocated by S. D. W., of *ph* into *f*, *y* into *i*, and the like. We cannot, therefore, admit these departures from all acknowledged authorities without enteriug our decided protest against such useless alterations.—EDS.

been already given in *The Analyst*, it only remains to supply the fifth; and then the purchasers of this periodical will be in possession of the completest and most correct (though far from being so correct as it should be) catalogue of the British *vertebrata* yet published. The catalogue of beasts and birds was drawn up by the writer of this article, but that of the reptiles and amphibians by another hand. The author of the last mentioned paper (v. iv., p. 104) has, for some unexplained reason, not adhered to the rule by which I was guided in the nomenclature of the birds (see vol. iii., page 200), and which elicited his commendations, but has suffered his list to be deformed by some of those inconsistencies so rife among the Naturalists of the old school.

The writer observes—"It is not my intention to attempt, in imitation of my very able and enterprising predecessor, any sweeping plans of reform in the arrangement and nomenclature of the animals which constitute the subjects of my list." But where are these very "sweeping reforms" there mentioned? If it be true, as Mr. Swainson says, that "the principles of a good plan will be seen to greater advantage the more they are followed in detail," why should our author object to the *detail* if he applauds the *plan*? And, moreover, not above four or five alterations were required in the two classes given at page 105, which it would have been quite as easy, and much more advantageous, to have made than to have omitted.

Our author says, at page 105—"The writer to whom I have just adverted has, both in his catalogue of British birds and *mammalia* (beasts), advanced many steps which he will find it, after all, necessary to retrace, and neglected almost as many others which might have been taken with equal safety and advantage." How easy and convenient to make an off-hand assertion! how hard, how troublesome, to be called on to prove it! Yet a reasoning being is no more to be satisfied with the former in place of the latter, than a hungry person would be content with a stone for bread or chaff for wheat. What are the steps too many thus condemned, may be gathered from some of the interesting reviews of the *Birds of Europe* by the same writer. For instance, in vol. iv., page 275, he speaks unfavourably of Cuvier's division, *Budites* (or *Pecula*) from *Motacilla*, but at the same time he has spared us the necessity of defending this procedure by saying that "the peculiarity of structure (of the *Budites*), although furnishing a good sub-generic, is not of sufficient weight to constitute alone a generic character." And pray what are the minimum divisions in the list spoken of

(vol. iv., page 200) but sub-genera?—so called, at least, by some; Swainson contends that the smallest divisions should be called sub-genera: I, however, coincide with the more widely spread and defensible plan of Selby, that *genera* should continue to be used in the same sense as heretofore, from the time of Ray to the present day, namely, as the *smallest division*, and that the next in rank (corresponding to the genera of Swainson's *Northern Zoology*) should be named *Domus*, which is between the section (sub-family of some) and the genus. At page 279, vol. iv., our critic objects to, and gravely argues against, removing the Bearded Pinnoc (*Calamofilus biarmicus*) from the Tits (*Parus*)! The writer of the interesting article on *British Oology* in the last number—an article written in the true spirit of a Naturalist—has not condemned this error a whit too severely. It would be waste of time to argue the matter, but I may refer the writer to the highly instructive and pleasing article on the subject in Partington's *Cyclopædia of Natural History*. So much for the first charge, and till the second is supported by facts, it must be supposed to be as spurious as its twin brother.

At the same time that I expose unfounded and thoughtlessly advanced charges, I shall be most happy to receive hints or suggestions of any kind, as expressed in a former paper. I have but little doubt of the principle here advocated being ultimately triumphant, and it has already made its way into some of the periodicals, especially in the youngest and most promising of the tribe, *The Naturalist*. I have several corrections myself to make, as *Surnia* for *Nictea*, and *Aluco* for *Surnia* (see *errata*, vol. iv., page 350); *glandarius* for the Bee-eater was, of course, an oversight. Locustell is better than Brakehopper, which will do for *Dumetella felivox*,—the Cat Thrush of Latham. The best British name for the genus *Silvia* is WILLET, an unexceptionable appellation. The Garden Willet (*Silvia melodia*, Blyth) is a familiar example. Siskin is preferable to Goldwing (see vol. iii., page 32). Mr. Blyth has proposed Alp for Coalhood (*Pirula*). Poppin is the name of a genus in the Parrot family; so that the *Crisoptilus* may be called by the common name Yaffel. Selby, in his *Pigeon family*, page 170, satisfactorily proves the Cream-coloured Dove (*Peristera risoria*) to be the Turtle Dove mentioned in the Bible; and thus it appears the translators were not so careful as they should have been in matters of Natural History. The real Turtle Dove (*Peristera turtur*) is a British species, while the Cream-coloured Dove is a domesticated favourite of the ladies.

Before commencing the ichthyological catalogue, I may as well advert to the objection which the author has expressed to the term mammalogy. This term has been recommended by Mr. Swainson, and also, if I mistake not, in the *Penny Cyclopædia*; and though certainly objectionable in many respects, I used it on a former occasion for convenience sake. It would naturally be supposed that the objector would be ready with one free from objections; but what will the reader think of *mastozoology*! Would not the term *theriology* be admissible? I think any objection that might be raised would be nullified by its advantages. I shall now, however, proceed to the catalogue, and if my paper is destitute of interest, that certainly cannot be from the *dryness* of the subjects of which it treats.

CLASS V.

FISHES.—PISCES.

ORDER I.—ACANTHOPTERIGII.

PERCH FAMILY.—PERCIDÆ.

	Perch, (Perca, <i>Linn.</i>)
Common Perch	Perca fluviatilis, <i>Linn.</i>
	Bass, (Labrax, <i>Cuv.</i>)
Common Bass	Labrax lupus, <i>Cuv.</i>
	Serran, (Serranus, <i>Cuv.</i>)
Smooth Serran	Serranus cabrilla, <i>Cuv.</i>
Dusky Serran	Serranus gigas, <i>Cuv.</i>
	Acerin, (Acerina, <i>Cuv.</i>)
Common Acerin	Acerina vulgaris, <i>Cuv.</i>
	Weever, (Trachinus, <i>Cuv.</i>)
Great Weever	Trachinus draco, <i>Linn.</i>
Little Weever	Trachinus vipera, <i>Cuv.</i>
	Mullet, (Mullus, <i>Linn.</i>)
Striped Mullet	Mullus vulgaris
Red Mullet	Mullus barbatus

GURNARD FAMILY.—TRIGLIDÆ.

	Gurnard, (Trigla, <i>Cuv.</i>)
Pineleaved Gurnard	Trigla pinnifolia
Streaked Gurnard	Trigla lineata, <i>Gmel.</i>
Safrine Gurnard	Trigla hirundo, <i>Bloch.</i>
Piper Gurnard	Trigla lyra, <i>Linn.</i>
Gray Gurnard	Trigla vulgaris
Red Gurnard	Trigla rubra

	Bullhead, (<i>Cottus</i>, <i>Linn.</i>)
River Bullhead	<i>Cottus gobio</i> , <i>Linn.</i>
Solitary Bullhead	<i>Cottus scorpius</i> , <i>Linn.</i>
Fourspined Bullhead	<i>Cottus bubalis</i> , <i>Cuv.</i>
Fourhorned Bullhead	<i>Cottus quadricornis</i> , <i>Linn.</i>
	Aspidofory, (<i>Aspidoforus</i>, <i>Lacép.</i>)
Common Aspidofory	<i>Aspidoforus catafractus</i> , <i>Jen.</i>
	Bergilt, (<i>Sebastes</i>, <i>Cuv.</i>)
Northern Bergilt	<i>Sebastes norvegica</i> , <i>Cuv.</i>
	Sharplin, (<i>Gasterosteus</i>, <i>Cuv.</i>)
Threespined Sharplin	<i>Gasterosteus aculeatus</i> , <i>Linn.</i>
Fourspined Sharplin	<i>Gasterosteus spinulosus</i> , <i>Yarr.</i>
Tenspined Sharplin	<i>Gasterosteus pungitius</i> , <i>Linn.</i>
	Stickleback, (<i>Spinachia</i>, <i>Flem.</i>)
Common Stickleback	<i>Spinachia vulgaris</i> , <i>Flem.</i>

MAIGER FAMILY.—SCIENIDÆ.

	Maiger, (<i>Scisena</i>, <i>Cuv.</i>)
Common Maiger	<i>Scisena vulgaris</i>
	Umbrin, (<i>Umbrina</i>, <i>Cuv.</i>)
Bearded Umbrin	<i>Umbrina vulgaris</i> , <i>Cuv.</i>

GILTHEAD FAMILY.—SPARIDÆ.

	Gilthead, (<i>Sparus</i>, <i>Cuv.</i>)
Lunulated Gilthead	<i>Sparus aurata</i> , <i>Linn.</i>
Becker Gilthead	<i>Sparus pagrus</i> , <i>Linn.</i>
Spanish Gilthead	<i>Sparus erithrinus</i> , <i>Linn.</i>
Common Gilthead	<i>Sparus centrodontus</i> , <i>Lar.</i>
	Dogtooth, (<i>Dentex</i>, <i>Cuv.</i>)
Common Dogtooth	<i>Dentex vulgaris</i> , <i>Cuv.</i>
	Canthar, (<i>Cantharus</i>, <i>Cuv.</i>)
Black Canthar	<i>Cantharus griseus</i> , <i>Cuv.</i>

MACKEREL FAMILY.—SCOMBERIDÆ.

	Mackerel, (<i>Scomber</i>, <i>Cuv.</i>)
Common Mackerel	<i>Scomber vulgaris</i> *
Spotted Mackerel	<i>Scomber maculatus</i>
	Tunny, (<i>Thinnus</i>, <i>Cuv.</i>)
Common Tunny	<i>Thinnus vulgaris</i> , <i>Cuv.</i>
Striped Tunny	<i>Thinnus pelamis</i> , <i>Cuv.</i>
	Zify, (<i>Zifias</i>, <i>Linn.</i>)
Common Zify	<i>Zifias gladius</i> , <i>Linn.</i>
	Centronot, (<i>Centronotus</i>, <i>Lacép.</i>)
Common Centronot	<i>Centronotus ductor</i> , <i>Jen.</i>
	Scad, (<i>Caranx</i>, <i>Cuv.</i>)
Common Scad	<i>Caranx trachurus</i> , <i>Lac.</i>

* This is named by Jenyns "Scomber Scomber!" This beats even the *Fringilla monti-Fringilla*, of Linneus.

	Dory, (<i>Zeus, Linn.</i>)
Common Dory	<i>Zeus faber, Linn.</i>
Hog Dory	<i>Zeus aper, Linn.</i>
	Oper, (<i>Lampris, Retz.</i>)
Spotted Oper	<i>Lampris luna, Flem.</i>
	Corifen, (<i>Corisfena, Linn.</i>)
Black Corifen	<i>Corisfena morio</i>

SCALEFOOT FAMILY.—LEPIDOPIDÆ.

Serrated Scalefoot	<i>Lepidopus argireus, Cuv.</i>
	Hairtail, (<i>Trichiurus, Linn.</i>)
Silvery Hairtail	<i>Trichiurus lepturus, Linn.</i>
	Conin, (<i>Gymnetrus, Bl.</i>)
Common Conin	<i>Gymnetrus arcticus</i>
	Cepol, (<i>Cepola, Linn.</i>)
Red Cepol	<i>Cepola rubescens, Linn.</i>

MUGIL FAMILY.—MUGILIDÆ.

	Mugil, (<i>Mugil, Linn.</i>)
Gray Mugil	<i>Mugil capito, Cuv.</i>
Thicklipped Mugil	<i>Mugil chelo, Cuv.</i>
Short Mugil	<i>Mugil curtus, Yarr.</i>
	Atherine, (<i>Atherina, Linn.</i>)
Common Atherine	<i>Atherina presbiter, Cuv.</i>

GOBY FAMILY.—GOBIADÆ.

	Blenny, (<i>Blennius, Linn.</i>)
Ocellated Blenny	<i>Blennius ocellaris, Bloch.</i>
Gattoruginous Blenny	<i>Blennius gattorugine, Mont.</i>
Crested Blenny	<i>Blennius palmicornis, Cuv.</i>
Montagu Blenny	<i>Blennius galerita, Mont.</i>
Smooth Blenny	<i>Blennius folis, Linn.</i>
	Gunnel, (<i>Gunnellus, Flem.</i>)
Spotted Gunnel	<i>Gunnellus maculatus</i>
	Tanglake, (<i>Zoarces, Cuv.</i>)
Viviparus Tanglake	<i>Zoarces viviparus, Cuv.</i>
	Anaric, (<i>Anarrhichas, Linn.</i>)
Ravenous Anaric	<i>Anarrhichas lupus, Linn.</i>
	Goby, (<i>Gobius, Linn.</i>)
Black Goby	<i>Gobius niger, Linn.</i>
Two-spotted Goby	<i>Gobius bipunctatus, Yarr.</i>
Spotted Goby	<i>Gobius minutus, Pall.</i>
Slender Goby	<i>Gobius gracilis, Jen.</i>
	Dragonet, (<i>Callionimus, Linn.</i>)
Gemmeous Dragonet	<i>Callionimus lira, Linn.</i>
Sordid Dragonet	<i>Callionimus dracunculus, Linn.</i>

ANGLER FAMILY.—LOFIDÆ.

	Angler, (<i>Lofius, Linn.</i>)
Common Angler	<i>Lofius vulgaris</i>

RAS* FAMILY.—LABRIDÆ.

Ballan Ras	<i>Labrus maculatus</i> , Bloch.
Streaked Ras	<i>Labrus lineatus</i> , Don.
Little Ras	<i>Labrus pusillus</i> , Jen.
Striped Ras	<i>Labrus variegatus</i> , Gmel.
Trimaculated Ras	<i>Labrus trimaculatus</i> , Gmel.
Rainbow Ras	<i>Labrus julis</i> , Linn.
Ancient Ras	<i>Labrus tinca</i> , Linn.
Goldfinny Ras	<i>Labrus cornubicus</i> , Gmel.
Gibbous Ras	<i>Labrus gibbus</i> , Gmel.
Scale-rayed Ras	<i>Labrus luscus</i> , Linn.

FISTULAR FAMILY.—FISTULARIDÆ.

Longsnout, (*Centriscus*, Linn.)

Common Longsnout	<i>Centriscus vulgaris</i> .
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ORDER II.—MALACOPTERIGII.

CARP FAMILY.—CARPIADÆ.

Carp, (*Carpio*, *Antiq.*)

Gibel Carp	<i>Carpio carassius</i>
Golden Carp	<i>Carpio auratus</i>
Common Carp	<i>Carpio vulgaris</i>
	Barbel, (<i>Barbus</i> , <i>Cuv.</i>)
Common Barbel	<i>Barbus vulgaris</i> , <i>Flem.</i>
	Gudgeon, (<i>Gobio</i> , <i>Cuv.</i>)
Common Gudgeon	<i>Gobio fluviatilis</i>
	Tench, (<i>Tinca</i> , <i>Cuv.</i>)
Common Tench	<i>Tinca vulgaris</i> , <i>Flem.</i>
	Bream,— <i>Brama</i> .
Yellow Bream	<i>Brama vulgaris</i>
White Bream	<i>Brama blicca</i> , <i>Bloch.</i>
	Roach, (<i>Leuciscus</i> , <i>Klein.</i>)
Common Roach	<i>Leuciscus rutilus</i> , <i>Flem.</i>
Dobule Roach	<i>Leuciscus dobula</i>
Dace Roach	<i>Leuciscus vulgaris</i> , <i>Flem.</i>
Graining Roach	<i>Leuciscus lancastriensis</i> , <i>Yarr.</i>
Chub Roach	<i>Leuciscus cefalus</i> , <i>Flem.</i>
Redeye Roach	<i>Leuciscus erithroththalmus</i>
Azurine Roach	<i>Leuciscus cœruleus</i> , <i>Jen.</i>
Bleak Roach	<i>Leuciscus alburnus</i> , <i>Flem.</i>
Minnow Roach	<i>Leuciscus foxinus</i> , <i>Flem.</i>
	Loach, (<i>Cobitis</i> , <i>Linn.</i>)
Bearded Loach	<i>Cobitis barbatula</i> , <i>Linn.</i>
Spined Loach	<i>Cobitis tænia</i> , <i>Linn.</i>

PIKE FAMILY.—ESOCIDÆ.

Common Pike	<i>Esox lucius</i> , <i>Linn.</i>
	Gar, (<i>Belone</i> , <i>Cuv.</i>)
Common Gar	<i>Belone vulgaris</i> , <i>Flem.</i>

* We conclude *Wrasse* is here meant by the author.—Eds.

Saury,—*Saurus*.

Common Saury	<i>Saurus vulgaris</i>
	<i>Exocoetus</i> , (<i>Exocoetus</i> , <i>Linn.</i>)
Common <i>Exocoetus</i>	<i>Exocoetus vulgaris</i>

SILUR FAMILY.—*SILURIDÆ*.Silur, (*Silurus*, *Art.*)

Sly Silur	<i>Silurus glanis</i> , <i>Linn.</i>
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SALMON FAMILY.—*SALMONIDÆ*.Salmon, (*Salmo*, *Linn.*)

Common Salmon	<i>Salmo vulgaris</i>
Bull Salmon	<i>Salmo celox</i> , <i>Linn.</i>
Trout Salmon	<i>Salmo trutta</i> , <i>Linn.</i>
River Salmon	<i>Salmo fario</i> , <i>Linn.</i>
Voracious Salmon	<i>Salmo ferox</i> , <i>Jard.</i>
Little Salmon	<i>Salmo pusillus</i>
Char Salmon	<i>Salmo umbla</i> , <i>Linn.</i>
Torgoc Salmon	<i>Salmo salvelinus</i> , <i>Don.</i>
	Smelt, (<i>Osmerus</i> , <i>Art.</i>)
Common Smelt	<i>Osmerus eperlanus</i> , <i>Flem.</i>
	Graylin, (<i>Thimallus</i> , <i>Cuv.</i>)
Common Graylin	<i>Thimallus vulgaris</i> , <i>Nils.</i>
	Gwiniad, (<i>Coregonus</i> , <i>Cuv.</i>)
Common Gwiniad	<i>Coregonus lavaretus</i> , <i>Flem.</i>
Pollan Gwiniad	<i>Coregonous pollan</i>
Vendace Gwiniad	<i>Coregonus marsenula</i>

HERRING FAMILY.—*CLUPEIDÆ*.Herring, (*Clupea*, *Linn.*)

Common Herring	<i>Clupea vulgaris</i>
Leach Herring	<i>Clupea leachii</i> , <i>Yarr.</i>
Sprat Herring	<i>Clupea sprattus</i> , <i>Bloch.</i>
White Herring	<i>Clupea alba</i> , <i>Farr.</i>
Pilchard Herring	<i>Clupea pilchardus</i> , <i>Bl.</i>
Shad Herring	<i>Clupea finta</i> , <i>Cuv.</i>
Allis Herring	<i>Clupea alosa</i> , <i>Cuv.</i>
	Anchovy, (<i>Engraulis</i> , <i>Cuv.</i>)
Common Anchovy	<i>Engraulis encrasicolus</i> , <i>Flem.</i>

COD FAMILY.—*GADIDÆ*.Cod, (*Gadus*, *Linn.*).

Common Cod	<i>Gadus morhua</i> , <i>Cuv.</i>
Haddock Cod	<i>Gadus æglefinus</i> , <i>Linn.</i>
Bib Cod	<i>Gadus luscus</i> , <i>Linn.</i>
Little Cod	<i>Gadus minutus</i> , <i>Linn.</i>
	Whiting, (<i>Merlangus</i> , <i>Cuv.</i>)
Common Whiting	<i>Merlangus vulgaris</i> , <i>Flem.</i>
Pollac Whiting	<i>Merlangus pollachius</i>
Coal Whiting	<i>Merlangus carbo</i> , <i>Flem.</i>

	Hake, (Merluccius, Cuv.)
Common Hake	<i>Merluccius vulgaris, Flem.</i>
	Ling, (Lota, Cuv.)
Common Ling	<i>Lota molva, Cuv.</i>
Burbot Ling	<i>Lota vulgaris, Cuv.</i>
	Rocklin, (Motella, Cuv.)
Threebearded Rocklin	<i>Motella tricirrata, Nils.</i>
Fivebearded Rocklin	<i>Motella mustela, Nils.</i>
Common Rocklin	<i>Motella glauca, Jen.</i>
	Torsc, (Brosmus, Flem.)
Common Torsc	<i>Brosmus vulgaris, Flem.</i>
	Forkbeard, (Ficis, Art.)
Common Forkbeard	<i>Ficis vulgaris</i>
	Raniceps, (Raniceps, Cuv.)
Trifurcated Raniceps	<i>Raniceps trifurcatus, Flem.</i>

TURBOT FAMILY—PLEURONECTIDÆ.

	Plaice, (Platessa, Cuv.)
Common Plaice	<i>Platessa vulgaris, Flem.</i>
Flounder Plaice	<i>Platessa flesus, Flem.</i>
Dab Plaice	<i>Platessa limanda, Flem.</i>
Lemon Plaice	<i>Platessa microcephala, Flem.</i>
Pole Plaice	<i>Platessa pola, Cuv.</i>
Sandnecker Plaice	<i>Platessa limandoides, Jen.</i>
	Holibut, (Hippoglossus, Cuv.)
Common Holibut	<i>Hippoglossus vulgaris, Flem.</i>
	Turbot, (Pleuronectes, Flem.)
Greatest Turbot	<i>Pleuronectes maximus, Linn.</i>
Brill Turbot	<i>Pleuronectes rhombus, Linn.</i>
Topknot Turbot	<i>Pleuronectes punctatus, Bl.</i>
Muller Turbot	<i>Pleuronectes hirtus, Mull.</i>
Whiff Turbot	<i>Pleuronectes megastoma, Don.</i>
Scald Turbot	<i>Pleuronectes arnoglossus, Flem.</i>
	Sole, (Solea, Cuv.)
Common Sole	<i>Solea vulgaris, Flem.</i>
Lemon Sole	<i>Solea pegusa, Yarr.</i>
Redbacked Sole	<i>Solea lingula, Jen.</i>

LUMPY FAMILY—CICLOPTERIDÆ.

	Sucker, (Lepadogaster, Gouan.)
Cornish Sucker	<i>Lepadogaster cornubiensis</i>
Bimaculated Sucker	<i>Lepadogaster bimaculatus</i>
	Lumpy, (Ciclopterus, Linn.)
Common Lumpy	<i>Ciclopterus vulgaris</i>
	Lipary, (Liparis, Art.)
Common Lipary	<i>Liparis vulgaris</i>
Montagu Lipary	<i>Liparis Montagu, Don.</i>

REMORY FAMILY—ECHENEIDIDÆ.

	Remory, (Echeneis, Linn.)
Common Remory	<i>Echeneis vulgaris</i>

MUREN FAMILY—MURENIDÆ.

	Eel, (<i>Anguilla</i> , <i>Cuv.</i>)
Sharpnosed Eel	<i>Anguilla acutirostris</i> , <i>Yarr.</i>
Broadnosed Eel	<i>Anguilla latirostris</i> , <i>Yarr.</i>
Snig Eel	<i>Anguilla mediorostris</i> , <i>Yarr.</i>
	Conger, (<i>Conger</i> , <i>Cuv.</i>)
Common Conger	<i>Conger vulgaris</i> , <i>Cuv.</i>
	Muren, (<i>Muraena</i> , <i>Thunb.</i>)
Common Muren	<i>Muraena helena</i> , <i>Linn.</i>
	Morris, (<i>Leptocephalus</i> , <i>Gron.</i>)
Common Morris	<i>Leptocephalus vulgaris</i>
	Ofidy, (<i>Ofidium</i> , <i>Linn.</i>)
Beardless Ofidy	<i>Ofidium imberbe</i> , <i>Mont.</i>
	Launs, (<i>Ammodites</i> , <i>Linn.</i>)
Widemouthed Launs	<i>Ammodites tobianus</i> , <i>Bl.</i>
Smallmouthed Launs	<i>Ammodites vulgaris</i>

TUBEMOUTH FAMILY—SINGNATHIDÆ.

	Tubemouth (<i>Singnathus</i>)
Great Tubemouth	<i>Singnathus acus</i> , <i>Linn.</i>
Lesser Tubemouth	<i>Singnathus tifle</i> , <i>Linn.</i>
Equoreal Tubemouth	<i>Singnathus equoreus</i> , <i>Linn.</i>
Snake Tubemouth	<i>Singnathus ofidion</i> , <i>Bl.</i>
Worm Tubemouth	<i>Singnathus lumbriciformis</i> , <i>Jen.</i>
	Hippocamp, (<i>Hippocampus</i> , <i>Cuv.</i>)
Shortnosed Hippocamp	<i>Hippocampus brevisrostris</i> , <i>Cuv.</i>

ORDER IV.—GIMNODONTES.**TETRODON FAMILY—TETRODONIDÆ.**

	Tetrodon, (<i>Tetrodon</i> , <i>Linn.</i>)
Stellated Tetrodon	<i>Tetrodon stellatus</i> , <i>Don.</i>
	Orthagorise, (<i>Orthagoriscus</i> , <i>Sehn.</i>)
Short Orthagorise	<i>Orthagoriscus mola</i> , <i>Cuv.</i>
Long Orthagorise	<i>Orthagoriscus oblongus</i> , <i>Cuv.</i>

ORDER V.—SCLERODERMI.**BALIST FAMILY—BALISTIDÆ.**

	Balist, (<i>Balistes</i> , <i>Cuv.</i>)
Mediterranean Balist	<i>Balistes capriscus</i> , <i>Gmel.</i>

ORDER VI.—ELEUTHEROPOMI.**STURGEON FAMILY—STURIIDÆ.**

	Sturgeon, (<i>Sturio</i> , <i>Will.</i>)
Common Sturgeon	<i>Sturio vulgaris</i>

ORDER VII.—ACANTHORRHINI.

LONGNOSE FAMILY—CHIMÆRIDÆ.

Longnose, (*Chimæra*, *Linn.*)

Northern Longnose

Chimæra borealis

ORDER VIII.—PLAGIOSTOMI.

SQUALE FAMILY—SQUALIDÆ.

Squale, (*Squalus*, *Linn.*)

Speckled Squale

Squalus canicula, *Linn.*

Spotted Squale

Squalus stellaris, *Linn.*Shark, (*Carcharias*, *Cuv.*)

White Shark

Carcharias vulgaris, *Flem.*

Thresher Shark

Carcharias vulpes, *Gmel.*

Blue Shark

Carcharias glaucus, *Linn.*

Porbeagle Shark

Carcharias cornubicus, *Gmel.*

Beaumaris Shark

Carcharias monensis, *Shaw*Tope, (*Galeus*, *Cuv.*)

Common Tope

Galeus vulgaris, *Flem.*

Speckled Tope

Galeus mustelus, *Leach*Selache, (*Selachus*, *Cuv.*)

Basking Selache

Selachus maximus, *Cuv.*Spinax, (*Spinax*, *Cuv.*)

Picked Spinax

Spinax acanthias, *Linn.*Scimny, (*Scimnus*, *Cuv.*)

Greenland Scimny

Scimnus borealis, *Scor.*Zigen, (*Zigæna*, *Cuv.*)

Common Zigen

Zigæna malleus, *Val.*Squatin, (*Squatina*, *Dum.*)

Angel Squatin

Squatina angelus, *Cuv.*

RAY FAMILY—RAIADÆ.

Ray, (*Raia*, *Linn.*)

Skate Ray

Raia batis, *Cuv.*

Sharpnosed Ray

Raia oxirhynchus, *Linn.*

Bordered Ray

Raia marginata, *Lac.*

Shagreen Ray

Raia chagrinea, *Mont.*

Spotted Ray

Raia maculata, *Mont.*

Smalleyed Ray

Raia microcellata, *Mont.*

Thornback Ray

Raia clavata, *Linn.*

Starry Ray

Raia radiata, *Don.*

Sting Ray

Raia pastinaca, *Linn.*

ORDER IX.—CICLOSTOMI.

LAMPREY FAMILY—PETROMIZIDÆ.

Lamprey, (*Petromizon*)

Sea Lamprey

Petromizon marinus, *Linn.*

River Lamprey

Petromizon fluviatilis

Planer Lamprey

Petromizon planeri

	Sandpride, (<i>Ammocetes</i> , <i>Dum.</i>)
Common Sandpride	<i>Ammocetes branchialis</i> , <i>Flem.</i>
	Micsin, (<i>Mixine</i> , <i>Linn.</i>)
Glutinous Micsin	<i>Mixine glutinosa</i> , <i>Linn.</i>
	Lancelet (<i>Amfioxus</i> , <i>Farr.</i>)
Common Lancelet	<i>Amfioxus vulgaris</i> .

All the larger divisions here are from Yarrell's truly beautiful work on British Ichthyology; and a glance will suffice to show in what need they stand of revision. I have, however, made some approach to exactitude in nomenclature, and have not given up all attempts at correctness because perfection was at first unattainable. Indeed, the space taken up by the catalogue would have been lost, and worse than lost, if it had been a mere transcript of the commonly-received lists; for it is better to remain in ignorance than to be led into error. I have lately seen some passages of Swainson on nomenclature, which he should have been the last to have written: and, doubtless, he will be heartily ashamed of them ere long. The public has, on several memorable occasions, lately shown itself superior to the weakness of being led away by a great name from the paths of truth; indeed it is now arriving at years of discretion, and will no longer suffer itself to be drawn into the bog of error by every one who pretends to superior wisdom.

S. D. W.

October 15, 1836.

[This is certainly a most laudable attempt at a correct nomenclature of British Fishes. We, in general, approve of the names adopted; but fear that some of them will be found too uncouth by lovers of the euphonious. However, we are glad the attempt has been made, especially as such appellations as are objected to can easily be altered at any time. We wish that our Correspondent could be ashamed out of the absurd mode of spelling he has thought fit to employ; as we feel convinced that this trifling will deter many from adopting his really useful alterations.—EDS.]

ON THE EFFECTS OF CERTAIN MENTAL AND BODILY STATES UPON THE IMAGINATION.

BY LANGSTON PARKER, ESQ.

V.—ON THE HALLUCINATIONS PRODUCED BY THE IMAGINATION.

OUR present lecture relates to a mood of the Imagination distinct from the three we have noticed in the previous discourses. Hallucination is mistaken or diseased perception. It is the seeming presence of that which does not really exist to the senses of a waking man. It may extend to all the organs through which we derive ideas of the nature of things, but those of hearing and sight are most commonly affected, and of these two most frequently the latter. The Imagination derives all the materials from which it compounds its extraordinary scenes from the sense of vision. Sight is the most active, the most varied, and the most useful of all the bodily senses; most extended in its relations, and from which the mind derives by far the greater part of its ideas. It has to do merely with the surfaces of bodies, with their form, size, and colour; it is liable to misconception of these properties from many causes—from distance, from the state of the atmosphere, and from imperfection in the structure or functions of the eye itself. From these multiplied sources are produced a variety of mistaken perceptions, termed optical illusions; and from a number of causes of a similar character the ear is misled, and conveys a mistaken and false account to the brain. If these illusions be extended to the other senses, of course they derange the operations of the mind with regard to those properties of bodies which it is exclusively the destiny of such sense to ascertain. But these are not hallucinations, properly so called; it is true they convey erroneous ideas, and therefore may, in some measure, merit the term: but it is, as far as I am acquainted with medical or philosophical language, and the application of that language, exclusively applied to those illusions where no physical agent is concerned in their production. As the senses furnish the mind exclusively with all its ideas, and as this is dependent for their truth upon the fidelity of its servants, so does the mind by a reciprocal action, and by a mysterious property inherent in itself, direct the actions of the senses, and enable them to

judge truly and correctly.* As long as the mind remains perfectly sound, and its three great powers bear a strict and healthy relation to each other, the actions of the senses will be correct, and the ideas they furnish consonant to the order and perfection of nature. But when the faculties of the mind become unduly exalted, or the reciprocity of these actions destroyed—whether, as we have before seen, from disease of body or disorder affecting the mind in the abstract—a false action will be given to one or more of the senses, and hallucination will take place. From this view it will at once be seen that hallucinations will be most common in persons whose minds are totally deranged, in those labouring under the various forms of melancholy or mania; and this is actually the case, scarcely any form of insanity being totally devoid of hallucination of one or more of the senses. Hallucination may be confined to one sense, as monomania is limited to one series of ideas; the eye may be false whilst the ear remains true, the taste may be deceptive whilst the touch accurately informs of all the properties its functions permit it to ascertain. It is commonly the case that hallucination, as affecting one or more senses, bears a correspondent relation to that state of mind which produces the affection in the first instance; thus, the maniac will be deceived by the actions of every sense, while the hallucinations of the monomaniac will be confined to one. A very remarkable instance of this is related in a recent publication, and though probably well known, it illustrates so clearly this point, and throws so much light on the theory I have just promulgated, that I do not think it necessary to resort to works less known for an example, since I know not where I could find one so suitable and so authentic. It was not originally related to illustrate a point of similar character to that to which I am about to

* Hallucinations, according to Esquirol, are images produced by memory, and associated by imagination. Foville, with more truth, considers them entirely as the product of a morbid imagination, which gives reality to the ideas existing in the mind; *i. e.*, the mind presents its ideas to the senses in a form which calls into action the functions of that sense to which the hallucination is addressed. Thus, the mind calls up the idea of a form which the eye beholds, it conceives of sounds which the ear detects, yet which have no existence. A priest, a man of strong mind and good education, was subject to hallucinations of the ear; he heard voices which continually threatened him. Being reasoned with upon his affection, and the nature of depraved sensation and false perception being explained to him, he constantly replied—"I ought then to doubt what you say to me and what I see; for the sounds which appear to you to have no existence, appear to me as certainly to be real as anything else which I see or hear around me."

apply it. A person confined for that form of mental derangement which we considered in the last lecture as *amenomania*, or *gay melancholy*, fancied the asylum in which he was confined his own, and he contrived to account for all that seemed inconsistent with his imaginary right of property. There were many patients in it, but that was owing to the benevolence of his nature, which made him love to see the relief of distress. He went little, or rather never, abroad, but then his habits were of a domestic and rather sedentary character. He did not see much company, but he daily received visits from the first characters in the renowned medical school of the city, and he could not, therefore, be much in want of society. With so many supposed comforts around him—with so many visions of wealth and splendour—one thing alone disturbed the peace of the poor optimist, and would, indeed, have confounded most "*bons vivans*." "He was curious," he said, "in his table, choice in his selection of cooks, had every day three regular courses and a dessert; and yet, somehow or other, everything he ate tasted of porridge. This dilemma could be no great wonder to the friend to whom it was related, who knew that the poor lunatic ate nothing but this simple aliment at any of his meals."* His eyes were made the fools of his other senses, spreading before his deluded vision a splendid banquet, whilst the taste remained true to nature, and spoiled all his ideal dainties by not taking part in the deception.

There are certain states of mind in which we are carried, in our ideas, beyond the ordinary routine of thought and the influence of customary impression. This may arise from many sources—it may be caused by certain medicinal or morbid agents, as opium, nitrous oxide, and febrile miasma. But that to which I now allude is not produced by any of these; it is a condition of mind the consequence of great excitement, when, on the eve of some great enterprise—of some literary undertaking—about the success of which we are uncertain, the senses, though wandering over the forms of outward objects, take little cognizance of their presence. The mind, at these periods, throws no part of its being into the actions of the senses; they are inert and powerless. The whole mental faculties are concentrated about the one great object of our anxiety. There are many persons in whom this state of mental concentration is habitual. When alone, from the activity and vigour of their fancies, some novel idea soon intrudes, becomes cherished and isolated.

* *Letters on Demonology and Witchcraft*, by Sir W. Scott.

They create, and are charmed with the productions of their power, and are so lost in admiration of the beauties of their mental visions, or so occupied in their arrangement, that they lose all controul over their senses, which thus become liable to hallucination. When the mind is exclusively concentrated on one absorbing desire or fear, hallucination frequently takes place, and relates directly to some thing connected with the ideas upon which the mind is occupied. Of this character was the appearance of the ghost of Cæsar to Brutus, on the eve of the battle of Pharsalia.

Here we see intense occupation upon one subject, from which the mind had acquired a high degree of excitement, exalting the Imagination to the highest degree of which it is capable—that of giving form and colour to its productions, and stamping upon its waking delusions all the vividness of the fancies of our dreams. There is a strict analogy between the vision of the waking and sleeping states; since blind persons are as liable to hallucination, or rather to the appearance of visions, as those whose sight is unimpaired. This at once proves that the hallucination is not caused by an actual impression upon the sensitive organs, but by a creation of the Imagination presented to the sense of vision.* No one believes that they actually see the scenes which are presented to them in dreams. The illusions of wakefulness are precisely of the same character, though, perhaps, dependent upon a more exalted or active state of the Imagination than that which produces the incongruities of the illusions of our sleep. There was in Paris, in 1816, a blind Jew, whose visions were of the most extraordinary character. There were likewise two deaf women who continually heard persons addressing them, and held disputes with them incessantly, both day and night. The habitual activity and concentration of some minds produces constant hallucination. The case of Cardan, professor of mathematics at Milan in 1801, is a remarkable instance of this. "I descried," says he, "the shapes of castles, of houses, of animals, of horses with their riders, of herbs, of hills, of musical instruments, of the different features of men, and of their different garments.

* It will be recollected that in my first lecture I traced the influence of solitude upon the Imagination, and we found it to be a powerful exciting cause to the activity of this faculty of the mind. The same remark applies to hallucinations, which are always more frequent in solitude, in silence, and in darkness, than at other times. The impressions upon the senses made by surrounding objects are, in these situations, weakened; the mind retires, as it were, upon itself, and in its seclusion creates visions which only deceive the judgment.

Trumpeters appeared to blow their trumpets, but no sound was heard. I saw besides soldiers, people, and the forms of bodies even to this day unknown to me, groves and woods, some things of which I have no remembrance, and a mass of many objects rushing in together, yet not with marks of confusion, but of taste." Similar to this were the narrations of Blake, the painter, who saw fairies' funerals when he walked in groves or gardens, painted the ghosts of fleas in his bed-chamber, and conversed with the shades of Homer and Hesiod, Fingal, Tasso, and Milton, in the mists of twilight, on the sands and shingles of the sea shore. These instances of hallucination appear to be dependent upon occasional or habitual mental excitement, operating in the manner I have described. The mind may be wrought to its highest pitch of agitation from feelings partaking of a still more intense character, such as produced the vision of the dagger to Macbeth. There the fear of detection—the workings of a heart as yet not quite sealed in guilt—the apprehension of failure, or detection for the murder of Duncan—and the dazzling hopes which glimmered in the distance in case of success; the crown, the throne, power, and dominion with all its attendant honour, lent their combined influence to work the mind into a state of excitement which sanity could hardly equal. Macbeth's vision of the dagger is a perfect illustration of the nature of these hallucinations, and his remarks upon it at once shew us that he was aware that his excited state of mind had produced it. Thus—

"Art thou not, fatal vision, sensible
To feeling as to sight? or art thou but
A dagger of the mind, a false creation
Springing from the heat-oppressed brain?"

There is, again, a particular state of mental excitement produced in a mind which is occasionally the subject of aberration, upon the verge of which it stands without having actually thrown off the trammels of reason. It is, perhaps, superior in intensity to the last; the feeble impressions conveyed to the mind by the senses are followed by ideas of the most vivid and exalted kind. Dr. Hibern, in the zeal of metaphysical labour, has set himself to calculate mathematically the direct and inverse proportion between sensations and ideas, and the hallucinations which may be naturally expected to follow from these states. His attempt is ingenious, but false and unsatisfactory; it is splitting hairs, and calculating with precision

the size of their angles—it is trammelling immaterial mind with the gross fetters of material agents—it is looking for the phenomena of mind in metaphysics, without taking the workings of the former as the base of all the data of the most bewildering and falsest of sciences. “When I turn over the pages of the metaphysician, I perceive a science that deals in words instead of facts. Arbitrary axioms lead to results that violate reason ; imaginary principles establish systems that contradict the common sense of mankind. All is dogma, no part is demonstration. Wearied, perplexed, doubtful, I throw down the volume in disgust. It is from this cause that we are the slaves of false knowledge ; our imaginations being filled with ideas that have no origin in truth. We learn nothing from ourselves. The sum of our experience is but a dim dream of the conduct of past generations that lived in a total ignorance of the real nature of the objects which surrounded them, and of the laws by which they were governed. Our instructors are the unknowing and the dead. We study human nature in a charnel house, and, like the nations of the east, pay divine honours to the maniac and the fool.”* A series of systems have mystified existence, have clogged the simple and beautiful operations of nature with a thick and filthy colour, which has deformed and concealed her truths. We believe what our fathers credited, whilst they were convinced without a cause. They took an idea for a reality, were prevented, from popular superstition or ridiculous enactment, both civil and religious, from examining that which they were required to take upon record, and believe because the cloud of fanatics that preceded them had pronounced it true. In this remark I refer solely to the mistaken systems which have been formed to explain the various operations of nature, whether they regard the laws of mind or matter. The hallucinations of the senses have, perhaps, given birth to the most numerous and monstrous absurdities that have ever deformed the page of science. I have referred to some of these points in previous lectures, and therefore shall pass over them now, choosing rather to speak of the true which is, than of the false which has been. To return to the hallucinations of that state of excitation of the mind which borders upon mania. It is well known that the most vivid dreams attend commonly the approach to insanity, and so perfectly deceptive are they that persons cannot shake from their minds a conviction of their reality. This state of mind likewise occurs in the same persons during the waking state. Their

* D'Israeli.

vivid imaginations give to airy nothing not only a local habitation and a name, but all the attributes which physically characterize matter generally ; as form, colour, feature, deformity, and beauty.

Two examples of this state of mind producing hallucination occur to me ; they are in the cases of Hamlet and Tasso. At Bisaccio, near Naples, Manso had an opportunity of examining the singular effect of Tasso's melancholy, and often disputed with him concerning a familiar spirit which he pretended conversed with him. Manso endeavoured, in vain, to persuade him that the whole was the illusion of a disturbed imagination ; but the latter was strenuous, in maintaining the reality of what he asserted, and, to convince Manso, desired him to be present at one of the mysterious conversations. Manso had the complaisance to meet him next day, and whilst they were engaged in discourse, he observed Tasso to fix his eyes on a window, and remain immoveable ; he called him by his name but received no answer : at last Tasso cried out " There is the friendly spirit that is come to converse with me ; look ! and you will be convinced of the truth of what I have said." Manso heard him with surprise ; he looked, but beheld nothing but the sunbeams darting through the window ; he cast his eyes over the room but could see only its customary occupants, and was just going to ask where the friendly spirit was, when he heard Tasso speak with great earnestness, sometimes putting questions to the spirit, sometimes giving answers ; delivering the whole in such a pleasing manner, and in such elevated expressions, that he listened with admiration, and had not the least inclination to interrupt him. At last, this ghostly conversation ended with the departure of the spirit, as appeared by Tasso's own words, who, turning to Manso, asked him if his doubts were removed. Manso was more amazed than ever ; he scarce knew what to think of his friend's situation, and waived any further conversation on the subject.*

The history of Tasso is well known to all, and those who are familiar with the effusions of his fine genius, and ardent imagination, with the workings of a mind peculiarly alive to the tenderest sympathies and the nicest varieties of feeling, can judge of the torture of a mind thus constituted, and confined in a dreary cell, upon whose solitude broke no light except that of the dim and distant sun-beam, and upon whose silence no sound intruded save the ravings of the maniac, and the ideal voice of his attendant spirit. Tasso was not insane, and, comparing himself with the lunatics confined

* Hibbert, *On Apparitions*.

around him, he states "that none had seen him writhe or heard him rave;" he continues—

"Yet do I feel at times my mind decline
But with a sense of its decay : I see
Unwonted lights along my prison shine,
And a strange demon who is vexing me
With pilfering pranks and petty pains, below
The feeling of the healthful and the free ;
But much to one, who long hath suffered so,
Sickness of heart, and narrowness of place,
And all that *may* be borne, or *can* debase.
I thought mine enemies had been but man,
But spirits may be leagued with them—all earth
Abandons—Heaven forgets me—in the dearth
Of such defence the powers of evil can,
It may be, tempt me further, and prevail
Against the outworn creature they assail.*

The state of mind to which I have alluded has been still better illustrated by Shakspeare. The ghost of Hamlet's father must have been, in the scene where Hamlet is taxing his mother with her guilt, a creation of his own fancy, since we find it invisible to her, though it was visible to Horatio and his companions in the earlier scenes of the play. And this seems to have been the intention of the poet, to shew how a mind inordinately excited, in a temperament liable to wander, could produce phantoms which appeared real. He has placed his hero in this scene in a state of violent excitement, but has not made him mad. Thus his mother addresses him, when he points to the ghost of his father :—

"This is the very coinage of your brain :
This bodiless creation ecstasy
Is very cunning in."

He answers

"Ecstasy !
My pulse, as *yours*, doth temperately keep time,
And makes as healthful music. It is *not* madness
That I have uttered : bring me to the test,
And I the matter will *re-word* ; which madness
Would gambol from."

* *The Lament of Tasso.*

The intimate knowledge which this greatest of poets possessed of the phenomena of mind in all its various complexions, characters, and bearings, is truly wonderful. Hamlet disproves his insanity, though believing in the presence of his vision, from the only two causes which could possibly have produced or continued it, viz., disease of body or disorder of mind. And it is singular that the latter test given by Hamlet should have passed unnoticed so long in inquiries into the existence or non-existence of mental sanity. Sir H. Halford, by chance, determined to rely upon it in a case which was extremely doubtful, which, if the gentleman had been treated as sane, and suffered to make his will accordingly, would have involved the physicians in much litigation, and have been productive of a series of unpleasant consequences. It is sufficient to state that Shakspeare's test was correct; the gentleman did not re-word what he had before said, and immediately fell into a state of incurable mania. Thus does literature furnish her mite to the advancement of medical knowledge, and I cannot conceive any man to be less acquainted with the features of disease, *especially those of a mental kind*, who has devoted part of his time to literary attainment. The dramatic poets particularly, of all countries, have been extremely successful in the delineation of the human passions; they have shewn us mind in all its workings, they have given histories of its various constitutions, and have shewn the manner in which its different predispositions are likely to terminate. I illustrated this point to some extent in my lecture on the Imagination of the Insane. I mention this because I have no doubt that many persons suppose literature of a general character to be a pursuit utterly at variance with all medical attainment. Were this the place for such digression, I think many instances might be adduced, and numerous examples brought forward to prove that they commonly move hand in hand. Need I mention Darwin, Mead, Baillie, John Bell, Beddoes, Sir H. Halford, Abernethy, and others? It is probable that the narrations of the poet and novelist are, in many instances, taken from actual occurrences, which, from the imperfect state and the limited study of medicine in the earlier æras of its history, would otherwise have passed unnoticed. If this were not the case, the knowledge of many of them must have been intuitive. If Le Sage had not heard of or witnessed a case of disorder and death from the supposition that a person was constantly haunted by a spectre, how are we to account for his history of the case of the Duke d'Olivarez, who fell a victim to an imaginative affection of this nature? To one of two causes only can it be attributed—the one which I have men-

tioned, or so intimate a knowledge of the nature of the Imagination as to foresee that, in certain conditions, it must produce illusions of this character, though none had fallen under his own observation. If this latter were the case, how correct a metaphysician must the novelist have been; since we find in the *Letters on Demonology and Witchcraft* a narration so similar in all its points, that one appears a counterpart of the other.

The causes of hallucination which I have enumerated, are dependant altogether, as we have seen, upon morbid states of the mind; our next division includes those which are the result of diseased conditions of body. These morbid states are so extremely variable, and so numerous, that it would require many lectures to illustrate, even in a general manner, the relations of those conditions of body and mind, which are likely to be attended by hallucinations of the senses. There is one remark, however, which will apply generally to all these, namely, that hallucination never takes place (except where the organs of sense and perception, the brain and senses are the subjects of complaint) without powerful predisposition in the constitution of the mind, which might have produced hallucinations from moral causes, without the occurrence of bodily complaint. This predisposition to hallucination may be almost exclusively limited to persons of extreme nervous irritability, to those whose profession or occupation favours the development of the functions of the mind at the expense of those of the body; these are chiefly, as we saw in the last lecture when speaking of the predisposition to mania, divines, poets, metaphysicians, and literary or sedentary persons in general. The case of Nicolai naturally occurs to us here. Before entering into the detail of one of the most remarkable cases on record, I wish to say that the previous state of Nicolai's mind was one of naturally great power; he was highly imaginative, took great pleasure in inventing ideal scenes and mental pictures—composed on his bed novels, dramas, and fictions of all kinds, and was most happy when he threw the reins from his guidance, and left his fancy to wander unrestrained through the flowery meads of the lighter branches of literature. In addition to this predisposed condition of mind, he had been greatly excited by a concurrence of unpleasant circumstances, which had been followed by violent mental excitement, and were enough in themselves to have produced hallucinations of the senses in a character of his temperament. Further, he had neglected his usual periodical blood-letting, which had produced some indisposition of body, the particulars of which it is not necessary here to mention. "On a sudden," writes he, "whilst reclining

on the sofa, I perceived, at about the distance of ten steps, a form like that of a deceased person. I pointed to it and asked my wife if she did not see it? It was but natural that she should not see anything; my question, therefore, alarmed her very much, and she immediately sent for a physician. The phantasm continued about eight minutes and then disappeared. At four in the afternoon, the form which I had seen in the morning re-appeared. I was by myself when this happened, and being rather uneasy at the incident, went to my wife's apartment, but there also was followed by the apparition, which, however, at intervals disappeared. About six o'clock there appeared also several walking figures, which had no connection with the first. After the first day the form of the deceased person no more appeared, but its place was supplied with many other phantoms, sometimes representing acquaintances, but mostly strangers; those whom I knew were composed of living and deceased persons, but the number of the latter was comparatively small. The phantoms seemed equally clear and distinct at all times and under all circumstances, when I was by myself and when I was in company, as well in the day as in the night, in my own house as well as abroad; they were, however, less frequent when I was in the house of a friend, and rarely appeared to me in the street. When I shut my eyes the phantoms would sometimes vanish entirely, though there were instances when I beheld them with my eyes closed. I saw human forms of both sexes, but they seemed not to take the smallest notice of each other, moving as in a market-place, where all are eager to pass through the crowd; at times, they appeared to be transacting business with each other. I also saw several times people on horseback, dogs and birds. All these phantoms appeared to me of their natural size, and as distinct as though alive, exhibiting the purest flesh colour in the hands and face, and the most vivid shades in the dresses. The longer these phantoms continued to visit me, the more frequently did they return, whilst, at the same time, they increased in numbers. About four weeks after they had first appeared, I also began to hear them talk, they conversed among themselves, but more frequently they addressed themselves to me; their speeches were commonly short, and never of an unpleasant turn." After the continuance of these hallucinations for about four months, they began to fade; as the remedies employed for the cure of his indisposition were beneficial. The colours at first became dimmer, then the outlines of the figures were indistinct and fleecy; afterwards they appeared nothing more than a chaos of mist floating before him, till at length they mingled with the

breezes and were seen no more. It is not for us to say precisely in what manner the faculties of the mind are disturbed by affections of its material organ the brain. It is, however, extremely probable that this happens from a deranged circulation of the sanguineous or nervous fluids, for I assume it as a fact, that a nervous fluid does exist, though of so subtle a character that it will always escape the microscope of the most minute anatomist. Many facts might be adduced in support of this opinion, but they would be out of place. It is likewise probable that this disturbance of the mind, this undue predominance of one function to the extinction or diminution of the remainder, depends solely upon this derangement of the circulation of the nervous fluids, since we know that, in a vast number of instances, disorder of the blood-vessels would not be followed by any such train of events. Again; disturbance of the mind is produced by that mysterious connexion of the brain with remote parts of the body, which is termed sympathy; and this is, perhaps, by far the most common source of hallucination. The study of sympathy is altogether neglected, and its importance overlooked. If these were minutely traced in connexion with the different constitutions of mind as dependent upon those of the body, we should at once be in possession of a body of facts which would elucidate and explain all, or at least the greater part, of the phenomena of hallucinations. As it is, we are unable to explain the majority of the causes which produce this exalted state of the Imagination, and make the bodiless creations of the mind more vivid to the senses than those arising from the actual impression of the objects which surround us.

The constitution of the mind influences the nature of the illusions which are produced. If this be habitually gloomy and austere, superstitious and melancholy, and in this state it receive strong impressions, the nature of the attendant visions will be of a corresponding terrific character. A most extraordinary case of this character occurred in Paris some years ago; and I am not certain whether the subject of it is not now living, and does not yet retain her gloomy and horrible ideas:—A female, during a state of corporeal disease, gave herself up to the study, or rather to the perusal, of books of witchcraft and tales of sorcery. Under the mental excitement which this occasioned, as she was one day walking in her garden, she was surprized to see, advancing along the walk to meet her, a figure, whom she recognized as the Mephistophiles of some of her fictions. The sarcastic countenance, the sepulchral brilliancy of eye, the suit of sable in which he was habited, at once convinced her that the abyss had given up one of its inhabitants to communi-

cate with her on the subject of her grief, and to offer to her that consolation which neither heaven nor earth could bestow or afford. I should have said that, in addition to the other conceits which tormented her, her mind was uneasy with regard to a sum of money which she had borrowed, and in default of the repayment of which the creditor had threatened her with imprisonment. Mephistophiles accosted her with his usual insinuating politeness, with the sophistry which ruined Faustus, and the gilded temptation which has blasted and destroyed the happiness of thousands more: he promised to find her the money if she would make over to him her body, promising that her spirit should continue to wander through air and earth, through flood and fire, unharmed and imperishable, insensible to pain, unexcited by pleasure, and, like *Ladurlad*, free from all the various kinds of death which the united force of physical agents could inflict. She consented. She pricked her thumb—and signed the deed. Instantly, flames burst out around her, torrents rushed over her, the whirlwind and the tornado encircled her—but she was free from the violence of all. The devil had taken her body, her ghost only was left; and material agents could no more hurt her than they could affect the Being that created them. So firmly convinced is, or was, this poor creature that all that had passed was true, and not a creation of her own disordered fancy, that she affirmed she had attempted to drown, to burn, and to hang herself; for she was convinced that she was a spiritual and not a corporeal being, and, therefore, the things of earth had no power over her. The physician who attended her declared that he had, at her request, passed a small dagger through the fleshy part of her arm, and that she was totally insensible to pain.* *Such tricks hath strong Imagination.*

Hallucination partakes not only of the character of the individual in whom it occurs, but likewise of the nature of the disease which produced it. The last, however, is, in reality, so strictly dependent upon the first—i. e., the form of disease is so influenced by the temperament or constitution of the individual in whom it originates—that the second of these states may be considered merely as a morbid modification of the former. The hallucinations of hysteria, hypochondria, fever, and inflammation of the brain, will illustrate this point. Those attendant upon hysteria are of a lively and volatile character; the patient fancies herself attended by the most

* This case, originally observed and related by Esquirol, is to be found in the *Dictionnaire des Sciences Médicales*; art. *Demonomania*.

grotesque and curious apparitions, birds of the brightest exotic plumage, animals of the most extraordinary shapes, forms of the most fascinating and alluring description. The patient is generally highly delighted with her attendant spectres; their manœuvres produce the most violent peals of laughter, and the most extravagant expressions of delight. The hallucinations of hypochondria are sad and gloomy, consisting of single figures gliding about in slow and solemn state, attending a funeral procession, or weeping for the loss of property or friends; their countenances and dresses are all of the same sombre and forbidding cast, they all relate to the patient's misfortunes, and never minister to his pleasure; they are essentially the phantoms of sorrow, the personifications of grief, the emblems of sadness and despair. Those accompanying fever are of another character; they are vivid and numerous, hurried in their motions, constantly changing their shape, appearing and disappearing with wonderful celerity; like the dreams of persons thus affected, they are terrific or alluring, distressing or pleasant, in proportion as the symptoms are aggravated or mild. The spectres produced by inflammation of the brain border almost upon the intensity of those which we noticed in the last lecture as accompanying a paroxysm of mania. They are huge, gigantic shapes, corresponding in size and form to the great excitement of the mind. They are the Titans of hallucinations, powerful beings, armed, determined, and terrific. Their forms are strong and muscular, their countenances fiery and passionate, and their habiliments remarkable for the brilliancy of their colouring and the peculiarity of their fashion.

The last instances of hallucination from bodily affections which I shall mention, are those which occasionally attend the dying couch of the sick, or the rack or scaffold of the martyr. Strange and mysterious is the tie which connects the mind and body. We observe, during ordinary states of disease, the strength and faculties of the mind modified, exalted, and depressed in some degree proportionate to the bodily affection; during the series of lectures which I have been delivering, these have frequently fallen under observation, and from their various peculiarities of circumstance have led to some of our most pleasing illustrations. What the strength and limits of that connection are which unite the mind and body we know not; we see them grow and expand together into the full power of perfect maturity, we witness the beauty of that harmony which unites them in so close a bond; we wonder, and theorize, and speculate, and to a certain extent these dreams of science hold

good ; but when we come to that scene which shews us the death and destruction of one, we stand amazed at the power which the other sometimes appears suddenly to acquire. As, rising above the wreck of the body, the mind calls together its wandering faculties and, collecting them into a focus, shines forth with a brilliancy and splendour which illumine but for a moment and then pass away into a more extended field of inquiry, where our limited senses are unable to follow her. It is this degree of mental excitement which, at a moment when the material and immaterial portions of our nature are about to separate, produces these hallucinations, of which many instances have been recorded. It is a state not between death and existence, but between this present degree of it, and one far more exalted. The mind travels by anticipation into the unseen world, and from many circumstances of visions at these periods we might be almost led to suppose that a part of its glories were, in some instances, revealed to it. The memoirs of Lady Fanshawe furnish a remarkable example of this : she was so near dissolution that her friends supposed her actually dead. The struggling breath, the quivering lip, and tremulous motion of the body, indicated that the change had not, as yet, taken place. From the use of some remedies she was partially restored, and being so, she affirmed that she had been perfectly sensible to all that had passed around her, but that she had been visited by two in white raiment, from whom she had solicited a continuance of her existence for fifteen years. It was granted ; and her friends asserted that she did actually die that day fifteen years. This is one of those remarkable and rare coincidences between the vigour of the Imagination and the actual occurrence of facts that have at all times puzzled and misled the vulgar ; and, indeed, well-authenticated narratives of this kind, which this decidedly was, are Gordian knots at which even the learned shake their heads, and attempt not to untie. These kinds of hallucinations frequently deceive the senses of the dying. Shakespeare, with exquisite taste, has cast the halo of his genius around the death-bed of Catherine of Arragon, in deluding her with a vision of this character.

“Saw you not, even now, a blessed group
Invite me to a banquet, whose bright faces
Cast thousand beams upon me, like the sun ?
They promised me eternal happiness,
And brought me garlands, Griffith, which I feel
I am not worthy yet to wear, but shall assuredly.”

Theodorus, who was unremittingly tortured by Julian, the apostate, for ten hours, relates that, whilst under the hands of the executioners, he was visited by a bright youth, conceived by him to be a messenger from heaven, who allayed his sufferings by wiping the perspiration from his body, and pouring cold water upon his lacerated limbs. Gregory, Archbishop of Prague, under the extremity of the torture of the rack, had a vision, in which he supposed himself visited by three men, who were afterwards elected the first bishops of the Moravians. Massinger, in his play of *The Virgin Martyr*, has taken advantage of this fact, and introduces a spectral illusion to comfort Theophilus under torture by the command of the tyrant Dioclesian. The extacy produced in the martyr's mind by the hallucination is finely described by the poet.

"Most glorious vision !
 Did ere so hard a bed yield man a dream
 So heavenly as this? I am confirmed,
 Confirmed, you blessed spirits ! and make haste
 To take that crown of immortality
 You offer me. Death, till this blest minute
 I never thought thee slow paced, nor would I
 Hasten thee now for any pain I suffer,
 But that thou keep'st me from a glorious wreath
 Which through this stormy way I would creep to,
 And, humbly kneeling, with humility wear it.
 Oh ! now I feel thee. Blessed spirit, I come !
 And, witness for me all these wounds and scars,
 I die a soldier in the Christian wars."

Very vivid sensations of either kind, whether of pain or pleasure, change their character after long continuance ; the pleasurable becoming painful, whilst the painful are ultimately attended with extreme pleasure. It is the latter circumstance which is supposed to act with so much intensity upon the mind in cases of long-continued torture, and, by producing in it a like degree of excitement, to call up that kind of illusion to which I have just referred. The histories of religious persecutions furnish a multitude of facts of this nature. Happily, at this æra, and in this country, we know not the effects of bodily torture inflicted by the caprice or will of man : the rack, the wheel, and the pulley are now merely the curiosities of museums.

The only kind of hallucinations remaining to be noticed, are those produced by the nitrous oxide and by certain narcotic and acro-narcotic substances, as opium and the deadly nightshade. Those pro-

duced by nitrous oxide appear to have been much exaggerated, and chiefly extend to the delusions of the ear. Those from opium are of a most extraordinary character; of its effect in thus producing the hallucinations of spectral forms, I have to bring forward a case that perhaps has seldom been surpassed for its singularity. A most intimate friend of my own, a gentleman of high respectability, and well known in the world of science, received an injury in the thumb whilst abroad in a hot climate, which was followed by an attack of tetanus, commonly known under the denomination of cramp or locked jaw. He relied upon laudanum for his cure, and increased the dose till he regularly took nine drachms every three hours night and day for three weeks. He was not unusually affected by it for some days, but after the lapse of a short time, the chamber in which he lay appeared to extend itself on all sides till he fancied himself laid in a vast library and museum. (This effect of opium in apparently enlarging space, it will be recollected, I mentioned in my second lecture.) One side of the vast dome was covered with marine productions of all kinds, the other fitted up with books. By degrees the room became peopled with spectral forms, the living and dead moved about in all the natural beauty of countenance; the colours of the dresses were as vivid as though they clothed breathing forms; the spectres were not transparent or filmy, but concealed objects which were placed behind them, and in fact possessed all the characters of living men; they addressed him, reached down the books and spread them open before him, and he has assured me that many useful discoveries which he has since made were read by him in the spectral books, which the no less spectral librarians reached down for his perusal; tools of all kinds were strewed over the floor, the instruments of all nations, for war, agriculture, mechanics, and commerce, some of which he had never before seen, but which he has since recognized. This state of the imagination continued during the whole time he was under the full influence of the opium: as the quantity was diminished the spectres began to fade, the walls of his chamber to assume their customary plain appearance, and the room returned to its natural size and figure.

Such are the chief phenomena of the Imagination in health and in disease, sleeping and waking, in the sane and in the insane. This extraordinary power—this great division of the faculties of the mind—is the most varied in its actions, the most pleasing in its effects, and the most dreadful in its unlimited workings of any of the mental processes. It has been recognized in all ages as the great governor and modifier of the judgment; for it will be perceived

from what has been said in this series of lectures, that the balance of mental power rests entirely between these two. It has produced more diseases than the whole of the physical agents of the universe. It is, in many instances, the most powerful auxiliary to their cure. A knowledge of its effects upon the constitution of man led the ingenious Mesmer to invent that system of imaginary medicine which bears the name of animal magnetism. It gave rise to the metallic tractors—it produced all the benefits attributed to the inhalation of the various gases in case of bodily disease—it is the grand sheet-anchor of empiricism. Numbers of cases might be adduced where affections of the most decided and confirmed nature have been removed by acting upon the Imagination of the sufferers alone; not only in circumstances of imaginary diseases of a nervous kind—such as hypochondria and others—but where even change of structure, from the healthy to the diseased character has taken place. It is difficult, as in the cases of spectral hallucinations and disordered perception, generally to explain these facts; but they combine to lend an additional certainty to that view which considers them as changing the circulation, or at least the mode of action, of the nervous fluid.

I have now finished the remarks I had to offer on a subject certainly of great interest, and also of much importance. I regret I have not been able to do it more justice. A great part of it has been strictly of a scientific character, admitting, however, of considerable elucidation and illustration from various branches of literature. Literature is the handmaid of science. The latter is an unostentatious personage, plain in her attire and homely in her language; the former decks her in beauty, and gives her an eloquence at once powerful and enchanting. Philosophy is the general benefactor of mankind. She does not minister to the selfishness, to the pride, to the exaltation of individuals alone, but, by the production of useful arts, by the removal of real inconveniences and dangers—she improves the condition of all by giving sightliness to what was deformed, and utility to what was hurtful—she is not a being of one country, her speech is not confined to one language, nor her dress to materials drawn from one quarter of the globe. All nations bow before her, the people of all climes worship at her feet. She is like a building which the inhabitants of the world determined to erect, whose united efforts were to produce a structure perfect in strength and beauty. The various sciences and arts were engaged in the composition of the shell and the decorations of the walls. The mathematician gave it form and regulated

the disposition of its walls and angles ; the chemist engaged to protect it against the influence of atmospheric causes, to guard it from the tempest and avert from it the lightning. The poet and the painter lavished the perfection of their art upon it ; one covered its interior with pictures of every natural beauty, whilst the other exhausted language in their description. Like this is the one great family to which the learned of all nations belong ; it is the unison of many notes producing a perfect harmony, not the monotonous tinkling of one by some self-sufficient dreamer who considers all the rest harsh and untunable. Philosophy is not to be considered in the light in which Romeo viewed it ; we must not cry " Hang up philosophy, unless philosophy can make a Juliet." In the beautiful expression of Florian, " The sons of science should resemble those brilliant flowers which, although dispersed in various climates, compose but one single family."

[We cannot publish Mr. Langston Parker's fifth and concluding Paper on the Imagination, without thanking the talented author for the gratification he has afforded the readers of *The Analyst* by this delightful Course of Lectures.—Eds.]

SWARM OF MINUTE INSECTS IN AND AROUND MACCLESFIELD.

THE gloomy, cheerless, and almost wintry weather which prevailed throughout the greater part of September was suddenly succeeded, on the morning of the 24th, by a gleam of delightful warmth, reminding us of the most enjoyable days of summer. The wind blew softly from the south, the sun shone with the vigour of July, and the remnant of the preceding cold air lingering within our houses presented a singular contrast with the genial zephyrs which welcomed the opener of a door or a window. Those who were early risers on the above Saturday morning must have observed the moist accumulation of vapour on the outside surface of their window panes, consequent on this change of temperature. The glass, being an indifferent conductor of heat, for a time retained the internal chill derived from the previous unseasonable state of the air, and condensed from the southern-borne breezes the aqueous

particles they abundantly contained ; as was sufficiently evinced by the copious discharge of rain which fell in the latter part of Tuesday, the 27th of September.

Few are aware of the extraordinary and striking effects produced by these sudden atmospheric variations, affecting very intimately the economy of animal and vegetable life, and possibly, to a considerable degree, the inanimate world also, associated, as they are now proved to be, with vibrations of electric or galvanic agency.* To what extent, or by what precise process, the above causes, separately or conjointly, operated in the production of the entomological phenomenon about to be noticed, occurring on Sunday the 25th, and partially on the Monday following, when the weather was cooler, and again on the Tuesday till the rain fell, it is impossible to say ; but to this sudden change was unquestionably attributable the unprecedented swarm of minute insects, which, literally speaking, almost filled the air on the days above mentioned. Over what probable area it extended must be a matter of conjecture, but there is abundant evidence of this dense body occupying a space of at least twelve miles in length between Macclesfield and Knutsford, and about four in width, or in round numbers about fifty square miles. I am speaking now of this immediate neighbourhood, where the phenomenon came more directly under my observation ; but from York, Doncaster, Chester, Leeds, Buxton, and other places considerably distant, notices have been received of a similar out-pouring of this insect world ; which, however, seems to have appeared in partial masses, depending, in all probability, on streams of air of higher or lower temperature. But to return to my own immediate neighbourhood. If we assign half a dozen of these insects to a square foot—and we are sure we are speaking much within the mark, as the testimony of hundreds will vouch for—on a moderate computation not less than seventeen hundred millions (or about twenty times the number of the whole human population of the globe) of these tiny beings, each gifted with instinctive qualities, each furnished with a beautiful and perfect adaptation of physical structure for the purposes of its existence, were thus brought into visible life in the space of a few hours. Such an accession of vitality, as a matter of mere curiosity, cannot but be interesting, knowing so little as we do of the secret mode by which “the lord and giver of life” calls into action the elemental princi-

* The air denoted considerable electric action towards the beginning and middle of the week. On Wednesday there was much thunder and lightning.

ples of animation, from man to the mollusca, "from the dust of the earth." But in the present instance the phenomenon assumes not a less interesting, but a somewhat more alarming, aspect, when it is ascertained that the mighty mass, for it was all one and the same, not only in genus but in species, was composed of a family of insects which, if unchecked and unlimited in their ravages, would produce a desolation in our woods and forests, fruits and flowers, more fatally and permanently destructive than any Egyptian plague on record. For be it known that these countless myriads were neither more or less than the representative body of a formidable and fearful *blight*; against which, where it once obtains firm footing, human means have hitherto been found useless and unavailing.

The insect belonged to the class *Hemiptera*, and to the genus *Aphis*, commonly known by the name of Plant Louse, and familiar to all, on the rose trees, as those small wingless insects, which cluster together on the stems, usually just beneath the bud or the flowers, and on the larch, apple, and many other fruit trees, as the downy, soft clammy mites, which abound more or less, according to the prevailing character of the season. There are about one hundred known genera of this pestiferous breed, of which about fifty, we are sorry to say, have found a legitimate place, as indigenous or naturalized (for some of the worst have been imported from America or elsewhere) in Great Britain. The species which has led to these remarks, by its abrupt and multitudinous intrusion, is a beautiful subject for microscopic examination when exposed to strong solar light, for otherwise they appear to be nearly black. The wings, four in number, were perfectly transparent, rather iridescent, and with few reticulations. The head and thorax black, the metothoracic scutum marked with two bright orange bands. The eyes globular and prominent. The antennæ filiform, or of equal thickness, consisting of eight or nine articulations, the terminal one rather attenuating at the point. From the jaws a proboscis projected, which bent down so closely as to be nearly hidden under the thorax, and was not easily seen. The legs were six in number, of a tawny colour, with the exception of the thicker part of the tibia, which was black; the remainder of the tibia, and the whole of the tarsus being also semi-transparent; the latter was also partially furnished with short bristles; at the extremity of the abdomen was a short tubular horn; the colour of the abdomen was of a pale yellowish green and black, in lateral stripes.—Without very correct plates, or cabinets of reference, it would be hazardous to assign the exact specific name, but in description, it allied itself so nearly,

with one too well known, *Aphis pruni*, or common plum blight of the spring, that it might be almost identified with that species.

Of all classes of insects that of the *Aphis* assuredly presents the most singular and peculiar properties. While some are winged, others are not so, and this without distinction of age or sex. In the early part of the year they are viviparous, or producing their young alive; whereas, in the autumn, they are oviparous, or layers of eggs, which remain throughout the winter; but by a surprising aberration from the common laws of nature, it appears, that one impregnation of the female is sufficient for seven, certainly, and it is suspected of many more, generations; that is to say, that the first female will lay eggs, productive of other females, laying their eggs, and successively productive of seven or more broods; and when it is further known that in five generations, one single *Aphis* may thus be the parent of nearly six hundred million descendents, well may our foresters, nurserymen, and gardeners, tremble at the bare possibility of the stupendous influx we are now noticing, each carrying on its prolific capabilities without check or restraint, by which in the early part of next spring, such an appalling pestilence may be turned loose to make a barren wilderness of our gardens and pleasure grounds. But Nature—ever provident and circumspect—for the possible evil, has provided various checks, each or all of which, are ever at work in neutralizing the devastating effects which might otherwise ensue from similar causes. We have alluded to the operation in ceaseless action of meteorological and electro-magnetic agency. But if with them the disorder originates, by them also is the remedy provided, and the equilibrium of general utility and advantage restored. These little insects which germed into life so suddenly, were (if we may so designate them) children of the sun-beam; let it withdraw its invigorating radiance, let the winds blow but for an hour from a less genial quarter, and the thermometer fall but a few degrees,—they vanish,—their place is seen no more,—and their mass, the slight framework of an ephemeral existence, again becomes a compound of unorganized matter, ready, however, again at any appointed time, once more to become the recipient of animal or vegetable life, obedient to the summons, and according as it is acted upon by the fiat of Omnipotence.

THE POET SHENSTONE.

THE biographies of eminent men are too frequently made up of mere fulsome eulogies on their virtues, or bitter and harsh declamations against their vices; qualities, portions of which will be found inherent and mingled in all characters, but which in these instances are exaggerated and painted with an overloaded pencil, to gratify and tickle the whimsical and capricious palate of a false public taste. Their real characters, their habits, and train of thought, their real opinions, and the real motives of those actions of which alone the world can have cognizance, can never be ascertained with any certainty from such compositions. Whatever, therefore, has a tendency to afford us data by which to judge of the talents, the taste, the intellectual cultivation and acquirements of men eminent in their generation, cannot fail of proving acceptable to every sincere and honest inquirer after truth.

In the library of the late Mr. David Parkes, of Shrewsbury, were many delightful memorials of the elegant-minded Shenstone, and among these a copy of Prior's Poems, 5th edition, 3 vols., London, 1733, with a portrait prefixed, which originally belonged to the poet, and which was peculiarly interesting, as containing memoranda of his having perused the volumes with critical attention, marking each poem with a certain number of crosses, indicative of the degree of excellence which he conceived each to possess.

On the fly leaves of the first volume are the following observations, in Shenstone's hand-writing:—

“ Des livres
Du Guill. Shenstone
du Coll. du Pem.
a Oxon. 1735.”

“ November the 26th, 1739.—Read over all Prior's Works a second time, marking the pieces I most admired with a proportionate number of crosses.”

“ Prior's Cloe was a cheerful, gay, facetious old woman, that used to laugh with a profusion of good humour until she was almost ready to die, at the conceit of her being a poet's flame. And Prior, we may be sure, was equally delighted with the excellence of her understanding. See the *Critick on Vanessa*, in Swift's Works, vol. vi.”

At the end of the volume was

"An additional stanza to the Nut-brown Maid, from Mr. Percy's old MS."

"Here ye may see, that women be
In love, kinde, meeke and stable;
Let never men reprove them then,
And call them variable.
But rather pray* to God, that they
To men be comfortable,
That have *proved*, such as they loved;
If they be charitable.†
But all men wolde, the women sholde
Be kind to them each one.
Yet rather I had God obey
And serve but him alone."‡

The following are the pieces marked :—

- xxxx Epistle to Fleetwood Shephard, Esq.
- x A Song
- x The Despairing Shepherd
- xx To the Hon. Charles Montague, Esq.
- x Lady's Looking Glass
- x To a Lady, she refusing to continue a dispute, &c.
- xx Celia to Damon
- xx Ode on His Majesty's Arrival in Holland, 1695
- x Imitation of Anacreon
- x An Ode
- x English Ballad on taking of Namur
- x To Mr. Howard; an Ode
- x Love Disarmed
- x Cloe Hunting
- x Cupid and Ganymede
- x Cupid Mistaken
- x Venus Mistaken
- xxxx The Dove
- xx A Lover's Anger
- xx On Beauty; a Riddle
- xxxx The Garland
- xx The lady who offers her looking-glass to Venus
- xx Cloe Jealous

* Thank ?

† Obscure.

‡ "This last seemingly indicates it to have been written by a lady."

- xx A better Answer
- xxxx To a young gentleman in love
- xxxxxx An English Padlock
- xxxxxx Hans Carvel
- x Paulo Purganti
- xxxx The Ladle
- x To Dr. Sherlock, on his *Practical Discourse concern-
ing Death*
- xx The Chameleon
- xx Merry Andrew
- xxx A Simile
- x The Flies
- x Epigram—"To John I ow'd," &c.
- x Another—"Yes! every poet," &c.
- xxxxx Nut-brown Maid
- xxxxxx Henry and Emma
- x A True Maid—"Ten Months," &c.
- x A Reasonable Affliction
- xx An Epigram written to the Duke de Noailles
- xx Epilogue to Phædra
- xx Epilogue to Lucius
- xxxx The Thief and the Cordelier
- xxxx An Epitaph
- x Earl Robert's Mice
- xxx In the same style
- x In the same style
- xxxx Protogenes and Apelles
- xxxxx Alma; three Cantos
- xxx The Turtle and Sparrow
- xxx Down Hall
- xx Epistle to Fleetwood Shephard, Esq., 1689
- xx The Remedy worse than the Disease
- xx On Bishop Atterbury burying John, Duke of Bucks
- xxxx The Conversation
- xx Colin's Mistakes
- xx The Female Phaeton
- x Judgment of Venus
- xx Epitaph for Himself, spoken extempore.

W. A. L.

THOUGHTS ON THE SUBLIME IN MUSIC.*

BEFORE we proceed to the consideration of this subject, or rather as affording some prefatory explanations of our own views, let us examine two papers by Mr. H. J. Gauntlett, which appeared as leading articles of a monthly publication, called the *Musical World*; and in which, the principles laid down by Dr. Crotch in his musical lectures, and elsewhere, are controverted with rather more warmth than the occasion seems exactly to require. Mr. Gauntlett *appears* to ground his hostility mainly on the bad judgment shewn in awarding the Gresham prize, and on the small success which has attended the labours of Dr. Crotch and his followers, in the production of music for the church. We say *appears*, for though he does not say so in as many words, and although he has, in a loose and rambling manner, brought forward arguments which he imagines tend to demolish these principles; yet it is sufficiently evident that his remarks were prompted by what he considers the malawardment of the prize: from *this* springs his hostility to the principles above mentioned, to shew the justice of which hostility, he afterwards seeks for arguments, and brings forward examples and even ridicule. With what ability, fairness, and success he has wielded these weapons, we now propose to inquire.

Mr. G. commences by giving an account of the origin of the Gresham prize, annually awarded, "for the best original composition in sacred vocal music, either hymn or anthem; the words to be selected from the Canonical Scriptures, &c.; and to be set for three, four, or five voices, with a separate part for the organ; the music to be entirely new." Mr. G. has put the last two sentences in italics, for reasons, doubtless, most excellent, but which we confess ourselves unable to fathom. The first prize was awarded to Mr. Charles Hart, the second to Mr. Kellow Pye, the third to Mr. Goss, the fourth to Mr. Elvey, the fifth and last to Mr. C. Lucas. Now, from these compositions having gained the prize, Mr. Gauntlett infers that they are all in what the umpires consider the true sublime style, and thence that the principles on which Dr. Crotch (one of the umpires) has founded his decision, are groundless. This inference is, we think, not borne out by sound reasoning: it is not

* We propose, in future, to dedicate a few pages in each number to an original paper on the "divine art," and a few more to critical notices of such new musical publications as are sent to us for review.—Eds.

possible, nay probable, that, far from being what Dr. Crotch would have wished them, they were only what he considered the *best* of those presented to him. Mr. G. begs the question; he first takes for granted, not only that there are those existing, who can write in the style advocated by the doctor, but that compositions in this style were sent in for competition; and then, because a certain composition gains the prize, concludes it must be in that style. He cannot escape this dilemma, for he has made the Gresham prize compositions the test of the soundness of Dr. Crotch's opinions on the true style of church music. But suppose all sent in to be indifferent (a thing not at all impossible) *some one* must gain the prize, which was to be given for the *best*, but not necessarily for a *good* composition. Having now taken down what in reality, if not in seeming, is Mr. G.'s *main-sail*, let us now examine the minor details of his rigging.

Let him speak for himself:—"The habit of madrigal and glee writing has hitherto exercised a powerful influence on the ecclesiastical style of our countrymen. Indeed, the two modes acted reciprocally upon each other. The vocal works of Handel have, in some degree, effected a departure from the more ancient forms of church music. The fine anthem, *Like as the Hart panteth for the Water Brooks*, evidently afforded a model to Boyce for that best effort of his genius, the anthem composed for the annual celebration of the festival of the sons of the clergy. Battishill also adopts the very phrases of the great German composer. The beautiful point on the words 'Think thou on me, O Lord,' from the trio anthem, *Call to Remembrance*, is taken from the last eight bars of the movement which closes the fine duett, *Se tu non Lasciamore*. That it was a favourite sequence with Battishill, is evident from his use of it again in one of his three-part glees." Now what, in the name of common sense, has all this to do with the question? the vocal works of Handel, may, or may not, have exercised the influence he speaks of; the effect, however, from whatever cause arising, still remains the same, namely, the increasing secularisation, and consequently, the decreasing sublimity of music for the church. Who that has an ear to judge of, and a mind to appreciate, true sublimity, will deny that from the time when Bird flourished, down to the end of the last century, to bring it no further, modulations and harmonies derived from the madrigal, the opera, and the concert room, have been gradually though not imperceptibly creeping in and polluting the fountain, which at its source was pure and unalloyed, and calculated only to rouse those emotions of veneration and awe, which

should be almost the sole end of sacred music. No one, we think, acquainted with the compositions produced during this period, will deny our position with regard to their general tendency: some great minds, we admit, there were, who endeavoured, and for a time did stop this downward march; but that march, nevertheless, *did* continue, and may with propriety be compared to a mountain stream, at times interrupted by rocks and other impediments, but only flowing the faster to its destination after it has overleaped those impediments.

Mr. Gauntlett divides the ecclesiastical composers of the present day into five classes:—

“1st. The school adopted by Wesley, which has been carried out on the same principles that led to the changes effected by Gibbons, Purcell, Boyce, and Battishill.

“2nd. The school adopted by Attwood and Novello, which, although they differ in degree, we do not deem the difference so important as to call for a distinct arrangement. These composers, like Wesley, recognise the principles laid down and practised by the great names just referred to, but apply them in a more dramatic manner. In each of these schools intense feeling takes the precedence of school-boy imitation.”—We suppose from this that the “great names above referred to” made “school-boy imitation” their chief aim!

“3rd. The school (yet in its infancy) founded on a union of Purcell, Bach, and Beethoven, of which the Exeter Wesley may be said to be the inventor.”—So that this school unites the merits of these three great masters! Surely Mr. G. was not awake when he penned this sentence.

“4th. The school adopted by those glee writers, who are not addicted to the schism propagated by the Oxford Professor, and which includes the names of Robert Cooke, Shield, Evans, Walmisley, Jolly, and others.

“5th. The ‘true sublime,’ of which Messrs. Crotch and Horsley are pre-eminently the corner stones.”

Let us ask Mr. G. which of the schools (if schools they must be) has produced, or is capable of producing, such another work as Dr. Crotch’s *Palestine*, except the one of which he is pre-eminently the corner stone? The answer is inevitable; *none*. Again, whose name, amongst those above mentioned, stands highest as a composer? If Mr. G. is unwilling to answer this question, we will answer it for him, and instance the Oratorio of *Palestine*, as Dr. Crotch’s

claim to rank above every living English composer. So that the "true sublime" has every reason to be proud of its corner stone.

After this enumeration—in which it is wished to be proved that the English ecclesiastical composers of the present day are superior, not only to their countrymen who preceded them, but even to Bach and Beethoven, two of the greatest of the continental composers—follows an explanation of their various merits, in which the words, "pedantry," "learning," "expression," and so forth, are employed, as they too often are, without any precise meaning. We have often heard people complain of the music of the older church writers, as wanting in "expression;" little dreaming, the while, that there may be expression which is beyond their comprehension: In such cases, we have sometimes tried to come to a proper understanding of the meaning annexed to this word by such persons, but have never obtained a satisfactory answer: we conclude, however, that when it *has* a meaning, it signifies those pleasant contrasts of soft and loud, quick and slow, &c., which are so calculated "*ad captandum vulgus*;" and which answer in music, to what in the sister art is called daubing: only use an agreeable variety of colours, and lay them on thick enough, you are sure to please the common herd. Every one admires Martin, a few only can really appreciate Michael Angelo.

We now come to his exposition of the principles of the "true sublime," and here it is that we complain of unfair dealing. He says—"1st. That as music is divided into three styles—the sublime, the beautiful, and the ornamental or picturesque—and that as in all cases where the order of the invention or adoption of the three styles can be ascertained, the *sublime* will be found to be the earliest, *ergo*, ancient music is the most sublime." Now, if ever a sentence was nonsensical from the beginning to the end, we think this is entitled to that appellation. What, we ask again, in the name of common sense, has "the *order* of the invention or adoption of the three styles" to do with the various merits of those styles? Mr. G. evidently misunderstands or wilfully misinterprets the principles he pretends to explain, or he would not have talked either of "invention" or "adoption." To any one who has even cursorily examined the music of the three last centuries, the impropriety of these words must be evident, implying as they do sudden and radical changes; whereas, as we have before stated, every thing during this time has been going on gradually, though not imperceptibly. The term "adoption," too, implies the use of one style to the exclusion of the others, which neither Dr. Crotch nor any one else has ever stated

to be the case. The last part of his sentence amounts to this—ancient music is the most sublime; *ergo*, it is so. Here he has given himself needless trouble. He goes on—"Ancient music is, then, confined to the period between 1400 and 1600. The learned professor of Oxford, finding that by this assertion, he had foreclosed the works of not a few writers, who enjoy the reputation of occasionally stumbling upon the pure sublime, subsequently enlarges his boundaries to the early part of the eighteenth century. He is thus enabled to let in Purcell and his contemporaries. Those who wish to study the early specimens of *pure sublimity*, on the principles laid down, must, we presume, look into the *Dodecachordon* of Glareanus. Choron, Fetis, Cherubini, and Reicha, afford examples sufficiently numerous to satisfy any reasonably modest student." Now, as Dr. Crotch distinctly avows, specimens of sublimity, if that were all that is wanted, may be found in the compositions of later writers; but it is to the general tenor of their works to which he directs attention: a mass by Cherubini is less sublime, as a *whole*, than one by Leo or Pergolesi: not that in the former, there may not be found specimens of sublimity, but that music, not adapted for sacred purposes, forms too large a portion of it. Let us hear Dr. Crotch himself:—"As long as the pure sublime style—the style peculiarly suited to the church service—was cherished, which was only to about the middle of the seventeenth century, we consider the ecclesiastical style to be in a state worthy of study and imitation—in a state of perfection. But it has been gradually, though not imperceptibly, losing its character of sublimity ever since. Improvements have, indeed, been made in the contexture of the score, in the flow of melody, in the accentuation and expression of the words, in the beauty of the solo, and in the delicacy of the accompaniment. But these are not indications of the sublime. Church music is, therefore, on the decline." Again: "Let the young composer study the productions of the sixteenth and seventeenth centuries, in order to acquire the true church style, which should always be sublime and scientific, and contain no modern harmonies or melodies." Here is distinctly mentioned, the class of writers to be studied by the student, if sublimity be his object; which, from Mr. G.'s silly reference to the *Dodecachordon* of Glareanus, one would not think had been the case. When a writer on science descends to ridicule, he may fairly lie under the suspicion of feeling himself on ground that will not bear him. Again, *ancient* music is not confined to the period between 1400 and 1600, but the assertion of Dr. Crotch is, that the true style of church music was most cultivated during the six-

teenth and seventeenth centuries ; which, not to notice the ridiculous and gratuitous use of the word *ancient*, makes the slight difference of one hundred years in the calculation : this, however, we presume is a consideration of small import.

With regard to the modulations and harmonies forbidden in ecclesiastical music—which is the next and last point noticed by Mr. Gauntlett, and in which he gives us a list of the chords he imagines are interdicted—the rule may be comprised in a few words. Let nothing trivial, nothing commonplace, nothing which reminds of the opera or concert-room enter into its composition ; here all must be elevated, calculated to excite feelings of veneration and awe, in unison with the sacred edifice in which it is performed, and approximating to the loftiness of the great Being, in whose service, and for whose praise it is employed. The same feelings which find their exercise in the worship and reverence of the Deity, will be excited by the sublime, in whatever way it may present itself.

In reading the two articles just noticed, no one, we think, can fail to be struck with the total want of fixed principle. Like the great majority of the public, the writer applauds and censures he knows not why : he seems to have no notion of criticism, unless it be founded on his own taste ; no test for excellence, but that derived from his own discernment. This it is which causes in the public such lamentable want of taste. People seem to have no idea that a composition can be good, which does not happen to please them ; yet if asked for the *reason* of their disapprobation, they look exceedingly foolish, or probably give a woman's reason. As long as public opinion exists in this state, can we expect music to assume the station it deserves ? Assuredly not : for it is contrary to reason to suppose that musicians should so far forget their own interests, as to oppose themselves to the prevailing taste on which their livelihood often depends, and their reputation is at all times to be gained ; and yet, without this opposition, they cannot make a reasonable use of the powers they possess. Public opinion must, and does influence the composers, and not composers public opinion. In order that the latter may exert a proper influence, and that music may assert its true dignity (which can only be the case when the different styles are confined to their proper spheres), it must be enlightened as to what are the true principles of criticism, as applied to the art, and be taught to appreciate the different values of, as well as the different degrees of, excellence to be found in the several styles. We should then no longer be sickened by hearing the works of the older church writers called dry and pedantic, or com-

plained of as deficient in expression, or as not *going to the heart*: we should no longer hear the trash of Bellini and his fellow labourers in the field of dullness, cried up to the skies, and Mozart, perhaps in the same breath, stigmatized as heavy: no longer hear vaunts of the improvements daily making in the art, when it is known that those improvements are made principally, if not solely, in the lower walks of that art; in short, no longer hear music applauded, solely because it pleases, or decried, because it is beyond the comprehension of a depraved taste.

Can any one, who has given the subject a moment's consideration, deny that the sublime is the highest department of all the fine arts? Who, in poetry, thinks of setting Thomas Moore or Mrs. Hemans before Milton? Many—the great majority, we have no doubt—in their hearts prefer the former; but, having some regard to their reputation as persons of taste, dare not avow their lurking partiality. Again; who, if he were making out a list of eminent painters, and placing them in the order of their merit, would set Copley, Fielding, or Hunt before Michael Angelo? Certainly no one would so commit himself: and why? not because his works are more generally pleasing, or more comprehensible to the uninitiated; but, in both these instances, because the principle is acknowledged, that, to succeed in producing sublimity is to have attained the highest excellence. We, consequently, never *hear* of Milton being dry, or Michael Angelo unintelligible. On the contrary, whatever they may *think*, all are anxious to be foremost in *expressing* their admiration of the works of these great men. Thus we see that, in these two arts, poetry and painting, certain fixed principles are acknowledged, in criticising and determining the degrees of praise to be awarded to works produced in them. This is one step gained. But in music, unhappy music, the attempt to introduce criticism founded on such principles, is scouted as the height of absurdity, as savouring of pedantry, and shewing the hardy innovator to be totally devoid, not only of genius, but of taste. In music, every one evidently thinks his own taste sufficient to determine, to his own satisfaction, the merits or demerits of a composition; on this, and this alone, it must either stand or fall. Thus it is that a modern Italian cavatina is preferred to and set far above *Hosanna to the Son of David*, by Orlando Gibbons, (if, indeed a comparison is condescended to), because, forsooth, it has more expression, because it goes to the heart, and a thousand other reasons equally full of meaning. But what is the proper way of viewing the subject? The sublime style of every art is, as we have stated, the highest

department of that art : those works, therefore, which excel in this style, should receive the highest admiration. But this style is, also, the most difficult to excel in, as well as to understand ; hence it has so limited a number of votaries, and touches the hearts of so few ; hence it is that the art, after it has risen to a certain pitch of excellence, assumes every year a less exalted character, and that sacred music is more and more debased by vulgar harmonies and operatic divisions ; until (which is now taking place) the public, disgusted by the degradation which it has itself brought about, recurs to the works of former times, and revives in itself that taste for excellence, and that appreciation of the *real* merits of compositions, to which it has been so long a stranger.

All persons generally call compositions they cannot understand dry and pedantic, and feel pleased only with those they comprehend ; ought they not, therefore, instead of railing at the immortal works of other ages, to endeavour, by a long and deep study of their excellencies, to render themselves capable of appreciating these relics of the mighty dead ? It is only the lower walks of any art that are naturally pleasing ; the higher, to become so, require long study, but, when once understood, afford a satisfaction to which the admirers of the former are strangers ; they possess the power of abstracting the mind from all surrounding objects, and of relieving it from care and sorrow itself. Sir Joshua Reynolds confesses that on first beholding the *Cartoons* of Raphael he felt disappointed, but that, after a closer investigation, he became so enraptured that he could hardly satiate his admiration of them. So it is with the sacred works of the sixteenth and seventeenth centuries ; they at first appear dry, pedantic, and antiquated, but gradually become more and more pleasing, until the mind, carried away by their sublimity, rises far above the earth, its petty cares and sorrows, and soars in a region of lofty and unalloyed pleasure—we may almost say enchantment—utterly unknown to the exclusive admirers of the pretty, the elegant, and what *they* term the expressive.

“ However persons may differ respecting this profusion of ornament, when applied to secular compositions, there can surely be but one opinion as to their admission into the church. Sacred music, as a medium of divine communications, ought to possess a character of its own, so distinct from the music of the concert room as in no respect to recal vain and idle associations.”* Unhappily, however, for music, instead of unity of opinion on this subject, we should

* *Music of the Church*, by the Rev. J. Latrobe.

certainly, on examination, find the majority on the other side, and the advocates for the preservation of the elevated character of church music few in comparison with those who see no impropriety in introducing languishing strains and operatic flourishes instead of what they call the dull, prosing, and inexpressive harmonies of the old anthem. It is argued by some that God is love, and that he never intailed to be worshipped in austerity and gloom: but has it never entered into their heads that there is some difference between the music required for the celebration of the love of God and that employed by a lover to gain the favours of his mistress? Is there no difference between God's love and man's love? The former is the highest and noblest sentiment that enters the human breast, and as such should be expressed in the loftiest and sublimest music, and not in

“Light airs and recollected terms
Of these most brisk and giddy-paced times,”

To guide the student to the attainment of the elevation and sublimity so indispensable to music designed for divine worship, we cannot do better than conclude by a quotation from the *Lectures on Painting*, by Sir Joshua Reynolds, a work from the study of which the musician will derive almost equal benefit with the painter:—
“The modern who recommends himself as a standard may justly be suspected as ignorant of the true end, and unacquainted with the proper objects, of the art which he professes. To follow such a guide will not only retard the student but mislead him. On whom then shall he rely? or who shall shew him the path that leads to excellence? The answer is obvious: those great masters who have travelled the same road with success are the most likely to conduct others. The works of those who have stood the test of ages have a claim to that respect and veneration to which no modern can pretend. The duration and stability of their fame is sufficient to evince that it has not been suspended upon the slender thread of fashion and caprice, but bound to the heart by every tie of sympathetic approbation.” “Let him, then, regard them as perfect and infallible; as subjects for his imitation, not his criticism.”

ANECDOTES ELUCIDATORY OF THE NATURAL HISTORY OF THE ERMINE WEASEL,

(*MUSTELA ERMINEA*, Linn.).

BY SIR OSWALD MOSLEY, BART., M.P., D.C.L.

PERHAPS you may consider the following facts not unworthy of a place in your interesting periodical, inasmuch as they tend to illustrate the peculiar habits of an animal which is commonly doomed to the most unrelenting destruction, although possessed of some redeeming qualities, the promulgation of which might, perhaps, entitle it to our protection.

During one of the severe winters with which we were visited some years ago, my attention was attracted towards certain patches of rough pasture, lately disclosed by the melting of the snow, beneath which they had long been concealed. I saw something approaching them, which, had it not been for its lively motions, I should scarcely have distinguished from the white scenery around. On drawing nearer, I discovered it to be an Ermine Weasel (*Mustela erminea*, Linn.), which had adopted its winter clothing. It was evidently in pursuit of prey, and the curiosity I felt to discover the object of its search, made me more cautious not to disturb its occupation. After losing sight of it a short time, I saw it emerging from a tuft of grass with a Field Mouse (*Mus sylvaticus*) in its mouth, and directing its course to a contiguous plantation. When arrived there, it quickly ascended a young Fir tree with its burden, and then as expeditiously descended without it. I continued to watch the motions of the little animal amongst the dead leaves, which lay in heaps around, until an opportunity of catching it unawares, whilst the head and fore parts were concealed amongst the leaves, presented itself, of which I did not fail to avail myself. In vain did my little captive bite and struggle; a strong pair of gloves and a firm grasp, effectually baffled all its attempts at escape; and after striking my victim several sharp blows on the head, I was fully persuaded that I had accomplished my purpose of putting an end to its existence. Whilst I continued to carry it in my hand, it had all the appearance of being quite dead, but no sooner had it touched the ground, upon which I soon after threw it, than the hypocritical little creature at once found its liveliness and strength restored, and immediately ran off with the greatest agility.

After I had recovered my surprise, I felt an anxiety to know what had become of the Mouse with which the Weasel had ascended the Fir tree. On climbing up it (the tree was at least fifteen feet high) I observed a small bird's nest* towards the top, in which the Mouse had been safely deposited by its destroyer.

Upon another occasion I perceived an Ermine Weasel in such close pursuit of a Rat that I had time to get my gun, and at one shot killed them both.

Surely this species is capable of being tamed, and made practically useful to mankind; its propensities are the same as those of the Ferret Weasel (*Mustela furo*), and in its nature it is much more hardy and less liable to disease.

*Rolleston Hall, Staffordshire,
Oct. 19, 1836.*

SOME REMARKS ON THE PHILOSOPHY AND OBSERVANCES OF SHAKSPEARE.

II.—THE TWO GENTLEMEN OF VERONA.

It is fortunate that the duration of human productions does not depend upon individual consent, or there would soon be nothing left to abolish: the appetites of mankind are so various and capricious, that unanimity of taste is as impossible as a verdict universally identical is impossible with fallibility; judgment must be fixed by majority; we, therefore, reject the peremptory opinion of Mr. Upton, who denies the right of Shakspeare to this play, and are content to be pleased in spite of criticism.

This play is altogether a love matter, it begins and ends with love, the whole business and process of it is love; Proteus, Valentine, Thurio, Silvia, Julia, all are in love. We feel it like an electric battery playing round our hearts, as though the poet had written it with a feather snatched from Cupid's wing.

The first scene is laid in Verona. The two friends discuss, wit-

* Probably that of a Golden-crowned Kinglet (*Regulus auricapillus*).—
Eds.

tily enough, the difference of their fortunes. Proteus starts in love, a sort of tinder-box to beauty, who takes fire with the first ray of a bright eye. Valentine, as yet "fancy free," escapes Verona, ambitious to see the "wonders of the world abroad." Proteus would dissuade him :

" Val.—Cease to persuade, my loving Proteus ;
Home-keeping youth have ever homely wits."

It is curious that Shakspeare should never have travelled, considering the naturally errant inclination which he so often exhibits, and the value which a local knowledge of those places connected with his plays might have given him ; he has, of course, for want of this knowledge, made several geographical blunders, especially that well-known one of making Bohemia a sea-port—it might have been known to him. He must have studied with some eagerness to supply the deficiency of travel.

This first scene is full of verbal quibbles and puns. To condemn Shakspeare on the score of his puns and quibbles is common with those saturnine, self-important persons, whose dignity is superior to a smile. But is it not rather an excellence than a fault ? being not only a peculiarity of the age in which he lived, but also common to every anterior and succeeding period ? With the lower class of the present day, what is so frequent as those little *jeu d'esprit*, called puns, those diaphragmatic stimuli. The Elizabethan æra of Latin and love, was celebrated for that euphuistical style of conversation which was always oscillating between the sublime and the ridiculous, the sober and the silly, and which those "chartered libertines," the "fools" of that day, tended to increase by their ceaseless ribaldry and jests. An ancient rhetorician delivered a caution against dwelling too long on the excitation of pity, for "nothing," he said, "dries so soon as tears." I have often noticed that ridicule and risibility never appear so easily excited as on the most melancholy occasions. Shakspeare's plays are the phantasmagoric images of the world as it is—a magnified, but yet a perfect, portraiture. Those who cry out against "plays on words," writes Schlegel, as an unnatural and affected invention, only betray their own ignorance : with children, as well as nations of the most simple manners, a great inclination to this is often displayed."

In Homer we find several examples ; the Books of Moses, the oldest written memorial of the primitive world, are full of them ; on the other hand, poets and orators, as Cicero, have delighted in them.

It has been thought injurious to the higher feelings to cross them with a lighter word; and hence Voltaire, that sardonic sceptic, observes that Hamlet "appears the work of a drunken savage."*

John of Gaunt, in *Richard II.*, dies with a joke upon his lips. The old man is visited by Richard, who inquires—

"What comfort man? How is't with aged Gaunt?"

Gaunt.—O, how that name befits my composition!
Old Gaunt, indeed; and gaunt in being old:
Within me grief hath kept a tedious fast!
And who abstains from meat that is not gaunt?
For sleeping England long time have I watched:
Watching breeds leanness; leanness is all gaunt:
The pleasures, that some fathers feed upon,
Is my strict fast—I mean, my children's looks;
And, therein fasting, hast thou made me gaunt:
Gaunt am I for the grave; gaunt as a grave,
Whose hollow womb inherits nought but bones."

Poor old duke! thy "half-jesting" upon death and grief would enforce more tears than the loudest lamentation; ridicule is disarmed at once by the voluntary contrasts of the poor old man: Such is the nature of life, and, in spite of all complaints, Shakspeare is right; amid the deepest scenes—

"Yet so to temper passion that our ears
Take pleasure in their pain, and eyes in tears
Both smile and weep."

Goethe has ingeniously compared Shakspeare's characters to watches with crystalline plates and cases, which, while they point out the hours as correctly as other watches, enable us, at the same time, to perceive the inward springs by which all this is accomplished.

Proteus, bantered by Valentine for the folly of his love, replies—

"Yet writers say, 'As in the sweetest bud
The eating canker dwells, so eating love
Inhabits in the finest wits of all.'"

This is true: love is the idol set up, not in the plains of Dura, but, as the sun, over the whole world, by that sensitive, empty-purse race of Parnassus. Like that fabled eastern bird which is nourished only by its own song, love lives in every thought, in every inspira-

* What better could we expect from a Thersities—a serpent, whose only weapon was his sting.

tion of the poet's life. Song is the language of passion, and passion is the incubation of love. The poet's deity is love, not, like the ancient lares, a visible appellative and domestic ornament, but an idol enshrined within the heart.

This play contains little philosophy ; there is little to describe, for the mere inconsistencies of passion are inseparable from the person. Speed preaches better on love than all the metaphysicians in the world. Julia, the doating Julia, forsaken by Prot us, determines on pursuing him :

*“ Luc.—I do not seek to quench your love's hot fire ;
But qualify the fire's extreme rage,
Lest it should burn above the bounds of reason.*

*“ Jul.—The more thou dam'st it up the more it burns ;
The current that with gentle murmur glides,
Thou know'st, being stopp'd, impatiently doth rage,
But when his fair course is not hindered
He makes sweet music with the enamel'd stones,
Giving a gentle kiss to every sedge
He overtaketh in his pilgrimage ;
And so by many winding nooks he strays,
With willing sport, to the wide ocean.
Then let me go, and hinder not my course :
I'll be as patient as a gentle stream,
And make a pastime of each weary step,
Till the last step have brought me to my love ;
And there I'll rest as, after much turmoil,
A blessed soul doth in elysium.”*

This is quaint and comical, but might be advantageously applied. Compulsion and resistance are two of the greatest evils in propagating evils in the whole conduct of mankind. The child obeys when he should prefer, is compelled when he should be induced, resisted when he should be removed.

The discovery of Valentine's plot by the Duke is cleverly managed—evasion was impossible : the Duke advises with Proteus in favour of Thurio—

*Duke.—What might we do to make the girl forget
The love of Valentine, and love Sir Thurio.*

*Prot.—The best way is to slander Valentine
With falsehood, cowardice, and poor descent ;
Three things that women highly hold in hate.”*

This aristocratic-looking passage may be a little offensive to timocratic eyes, for it is evident that falsehood is so associated with cow-

ardice, and both with poor descent, that the latter unites with the two former into a sort of tri-headed monster. It is as certain that falsehood implies cowardice, as that poor descent means their hereditary pre-inclination. When virtue was the correlative of title, then did poor descent mean something else.

Applied to woman, this passage is beautifully true.—“One naturally born to fears,” sexually timid, tremblingly sensitive, the dependence of woman is essential to love—a dependence which arises out of her nature, not her weakness, which exacts support without solicitation, associates her happiness inevitably with her protector, and constitutes through life a reciprocal bond. But with “falsehood” there is no confidence, with “cowardice” no protection, with “poor descent,” or their pre-inclination, no hope; and *these* three are one, and form the first element of love. The forgotten Julia visits her lover in disguise, discovers his treachery, and forgives it.

There is something most redeemable in woman's love: however base and depraved the object of her passion, *he* becomes interesting, and we sympathize with her fondness; we feel that there must be a cause for that love—some better qualities and feelings which elicited it. Proteus is a villain, but we almost forgive him for the love of Julia. Sir Walter Scott, in that bold, masterly character, Bothwell,* by describing the packet of letters found upon him after his fearful death, gives at once a better mould to his history; we look back to days lang syne, when the ferocious soldier was susceptible of softer feelings—we fancy him subdued with the sensibilities of love, and weeping over some fond, forgiving, heart-stricken girl. The love of youth is often a holy remembrance in age, and makes man proud under every change and condition of life. Little minds are incapable of passion; they possess merely admiration: but where love is one collected, exclusive, inordinate passion, it gives an unapproachable elevation to the character, and a dignity of manner superior to rule.

The play advances. Valentine becomes prince of outlaws, and saves his Silvia from the uncivil grasp of Proteus, “that friend of an ill fashion,” who, craven-like, acknowledges and repents when too late to be a virtue, and is somewhat weakly pardoned by Valentine; but love and generosity are equally uncensurable. Julia, poor Julia! thine is the hardest lot; for though love may blind the eye, it cannot “raze out the written trouble of the brain.” Thurio, good night!

* See *Old Mortality*, vol. ii., p. 225.

III.—THE MERRY WIVES OF WINDSOR.

There are some words, though not strictly onomatopœial, yet seem to have arisen out of the appellative, without search or derivation; as our words quick, giddy, glade, suck, comfort, glen, slow, slumber, &c., indeed nearly all the old Saxon words, to which our tongues seem organically adapted. *Merry!* the word sounds like fun. "Merry; gay of heart," says Johnson. Merry, Merry Wives of Windsor! The title is the theme; our hearts dance as we read it—Merry Wives! Young men hope what old men fear; but, Diana be praised! Englishwomen can be merry without sin.

Sir John, the only man who ever made grossness a virtue—"I shall think the better of fat men as long as I've an eye to make difference of men's liking." Slender is the very incarnation of cowardice, the personal antithesis of a lover, the true transcript of a simpleton—not fool enough to pity, nor wit enough to despise, a thing to laugh at without offence, and to ridicule without cruelty. Nim and Pistol are nonpareils of humour. Mrs. Quickly, "I fancy I see her now"—"Where, my lord,"—"In my mind's eye, Horatio." The merry wives are examples to all sober ones. "Sweet Anne Page," she has brown hair, and speaks small, like a woman." It is somewhat amusing to observe how the mustard-seed spirits of some men snatch a quarrel. Anne Page's "small talk" has occupied some hundreds of lines, *pro* and *con*, whether the poet meant small talk or nice talk.

"Mrs. Ford—Sir John? art thou there, my deer? my male deer?"

Fal.—My doe with the black scut!—Let the sky rain potatoes; let it thunder to the tune of *Green Sleeves*; hail kissing-comfits, and snow erin-goes; let there come a tempest of provocation, I will shelter me here."

How perfectly the character of this "creature of bombast" is kept up with the "Fat man" of *Hen. IV.* so completely resembling it. This boast to Mrs. Ford is the counterpart of the "eleven men in Lincoln Green." That potatoes are provocatives of love, is an old belief. The learned Brown does not mention this as one of the vulgar errors, in his *Pseudodoxia Epidemica*, though John Ayerton Paris, of digestive celebrity, puts such an hypothesis alongside with the lusty old proverb, "that 'tis good for the health to get drunk once a week."

Dr. Paris informs us that the supposed aphrodisiac quality of the potato arose from the circumstance of certain plants having acquired the names of others very different in their nature, but which

were supposed to possess a similarity in external character ; thus our potato (*Solanum tuberosum*), when it was first imported into England by the colonists in the reign of Queen Elizabeth, gained its appellative from its supposed resemblance to an esculent vegetable at that time in common use, under the name of the Sweet Potato (*Convolvulus Battatas*), and which, like Eringo root, had the reputation of being able to restore decayed vigour. Without disputing this point in the true Malthusian spirit, let us merely cast an eye over the lovely land of green Erin, which is little else than one great big potato bed, and remember that her population has increased, within a few years, from two to eight millions by starving on potatoes. If the worship of Venus were in vogue, we might change her appellative of Cyprian for Hibernian goddess ; when some Donnybrook deity, approaching her altar, “mater sæva cupidinum,” might offer up the first fruits of the soil :—

“Illic plurima naribus
 Duces sancta,* *fidisque, et resonantium*
 Delectabere tibi
 Mistis carminibus, non sine baculo.†
 Illic bis pueri die
 Numen cum teneris virginibus tuum
 Laudantes, *soleis sine*
 In morem salûm ter quotient humum.”—*Hor.*, Ode i., lib. iv.

The discourse of the fairies is full of soft compliment to loyalty. The “garter’s compass,” *honi soit qui mal y pense*, sounds strange in fairy tongue—*tempora mutantur*.

“*Evans*.—Where’s Bede?—Go you, and where you find a maid
 That, ere she sleep, has thrice her prayers said,
 Rein up the *organs of her fantasy*,
 Sleep she as sound as careless infancy.

Mr. Parker, in one of his admirable lectures, makes this striking remark, that “dreams are indicative of disease.” There is no doubt of this truth : that is, the dreams are so faint in a healthy person, that no “remembrance is warranted.” The facts, also mentioned by Mr. Parker, of sounds creating dreams corresponding in character to the particular noise is equally remarkable :

“drums in his ears,
 Then dreams he of cutting foreign throats,
 Of breaches, ambuscadoes, Spanish blades,
 Of healths five fathoms deep.”

* “Subaudi fuma.” *Herbe sancta* is a synonym of Tobacco.

† *Baculo* : an immetrical paraphrase of *shillalah*.

These phenomena Shakspeare seems perfectly, though wonderfully, to have observed. How philosophical, how beautiful, how true!—"Rein up the organs of her fantasy," shut out the busy world, close up sensation, quiet as an infant's sleep.

There is so much humour and good-nature in the catastrophe of this play, that we feel no pain for the penalty of poor Sir John, who, indeed feels no pain for himself; but retires, Parthian-like, with his face to the enemy; while poor Sir Hugh "makes fritters of the King's English." Caius, Slender, Page, all are done, "their arrow hath glanced" and struck home.

IV.—MEASURE FOR MEASURE.

"This play," says Johnson, "is particularly darkened by the peculiarities of its author." Then is the "darkness visible," otherwise the remark arose from the Doctor's candour that it was a darkness that was felt, and which many others have felt, without the honesty to confess as much. Though, as a whole, the play is less compact, there are few more interesting, and none which contain more sublime passages. The plot is said to have been taken from an old tragedy of Promas and Cassandra, 1573.

The Duke yields his power to Angelo for the ostensible purpose of enforcing certain laws which were unwhipped, abused. That the Duke suspected the character of Angelo, and knew of the injuries of Mariana, appears evident. The disguise was assumed, the better to restore the one and punish the other.

Duke.—Angelo, there is a kind of character in thy life
That, to the observer, doth thy history
Fully unfold: thyself and thy belongings
Are not thine own so proper as to waste
Thyself upon thy virtues, them on thee.
Heaven doth with us as we with torches do,
Not light them for themselves.
Spirits are not finely touched
But to fine issues."

This is a fine comment on that kind of character which repudiating nature sets up a stern morality against all appetite, and which is secure until tempted. Goethe remarks that "he hated the man that had not the heart to commit some absurdity;" and never was there a more profound philosophical remark. From infancy to age we are puppets to opinion, victims to the worst of all evils—the evil of propriety, that spy of conventional rule, which

extinguishes all spontaneity, and exchanges the natural out-pouring of love and delight for the niggardly use of a compelled virtue. Such is Angelo ;

“ who scarce confesses
That his blood flows, or that his appetite
Is more to bread than stone.”

Claudio, condemned to death by Angelo, on his way to prison meets his friend Lucio :—

“ *Lucio*.—Why, how now, Claudio ? whence comes this restraint ?

Claudio.—From too much liberty, my Lucio, liberty.
As surfeit is the father of much fast,
So every scope, by the immoderate use,
Turns to restraint.”

This is the sum of all hygeanic codes, and few there are but can offer a personal illustration. Lucio happily replies—

“ If I could speak so wisely under an arrest,
I would send for certain of my creditors.”

At the request of Claudio, Lucio seeks his sister, Isabella, and requires her to ask her brother's life of Angelo. To the entreaties of Lucio she replies—

“ My power ! Alas ! I doubt !
Lucio.— Our doubts are traitors,
And make us lose the good we oft might win,
By fearing to attempt.”

A thousand persons might express an idea that, from its prevalence, has grown into a proverb ; but none other than genius could invest it with such a powerful apparition. When our doubts stand before us as a personal foe, we wrestle with and overcome them ; but when we consider our fears as a part of *ourselves*, we excuse the timidity, for a man cannot quarrel with himself. .

Reading the eloquent arguments of Isabella before Angelo, we are struck with the pliability of her reasoning, assailing Angelo at first with generalities, next rising to the pathetic—the passionate ; bursting forth at last with an indignant spirit, she flashes her scorn and contempt upon him, but, withal, displaying the deep affections of her heart, toned down by the sensibilities of the sex.

Isab.—Oh, it is excellent
 To have a giant's strength, but it is tyrannous
 To use it like a giant.
Lucio.—That's well said.
Isab.—Could great men thunder
 As Jove himself does, Jove would ne'er be quiet,
 For every pelting, petty officer
 Would use his heaven for thunder : nothing but thunder.
 Merciful heaven !
 Thou rather, with thy sharp and sulphurous bolt,
 Split'st the unwedgeable and gnarled oak,
 Than the soft myrtle ;—But man, proud man !
 Drest in a little brief authority ;
 Most ignorant of what he's most assured,
 His glassy essence,—like an angry ape,
 Plays such fantastic tricks before high heaven,
 As make the angels weep."

It would be well if reading and learning this speech were made one of our religious duties. Nothing is so fatal to injustice as satire and contempt—write it up in our courts of law, in our halls of justice, in letters of gold by the side of the tables of the Decalogue. As I read, I fancy Isabella with her contracted brow, her eye dilated, her lip curled, her person, like "an embodied storm." I see Angelo stand reproved even in his thoughts.—Angelo, subdued, replies—"Why do you put these sayings upon me?" The imperatorial *dost* thou, is exchanged for the submissive *do you*.—Angelo's soliloquy is a better sermon than all the homilies of the church.

The fourth scene introduces us again to Isabella and Angelo : the whole scene is miraculously fine ; each line is a text of truth. Isabella's previous reply to Angelo somewhat offends me : that she should scorn the proposal, that she should reproach and threaten the character of Angelo, is natural ; but to avail herself of this very proposed crime to save her brother, on the condition of her silence, is, indeed, "holding a candle to the devil."

Act the third introduces Claudio in prison visited by the Duke, whose advice to Claudio is admirable ; it is incomparably better than the soliloquy of Cato, though in style so simple and unadorned.

Duke.—Be absolute for death ; either death or life
 Shall thereby be the sweeter. Reason thus with life :
 If I do lose thee I do lose a thing
 That none but fools would keep ; a breath thou art,
 Servile to all the skyey influences."

Of all the agents which assail the body none are so widely fatal as the atmosphere. The celebrated Montesquieu, who pursued the inquiry of climatic influence on both the body and mind, traces the peculiarities of nations to the influence of climate more than to any other cause. The climate of England, from its variability, is productive of the most fatal diseases. How many thousands yearly are victims to consumption! and, what is most melancholy, the evil springs even in the first element of life. With regard to the moral influence, we possess an advantage which does not belong to the cloudless skies of the east. Our world of clouds, with its thousand forms and colours, is alone in its grandeur, with all the magnificence of the ocean, it presents an ever-varying landscape.

“ England, with all thy faults I love thee still !
 My country ! and while yet a nook is left
 Where English minds and manners may be found
 Shall be constrained to love thee. Though thy clime
 Be fickle, and thy year most part deformed
 With dripping rains or wither'd frost,
 I would not yet exchange thy sullen skies,
 And fields without a flower, for warmer France
 With all her vines.”

The climatic suicidal mania of the English has been hitherto proverbial, but France, of late years, has assumed self-slaughter as an accomplishment, and, like a dramatic hero, makes it a point of study to “ die well.” If the old apothegm of Solon be correct, the French are philosophers to the last :—“ *Dici beatus ante obitum nemo debet.*” We shall find that poor Claudio did not much respect a “ perpetual honour :” visited by Isabella she makes known to him the condition of his pardon :—

“ Claudio.—Let me know the point.
 Isabella.—O, I do fear thee, Claudio ; and I quake,
 Lest thou a feverous life should'st entertain,
 And six or seven winters more respect
 Than a perpetual honour. Darest thou die ?
 The sense of death is most in apprehension ;
 And the poor beetle, that we tread upon,
 In corporal sufferance feels a pang as great
 As when a giant dies.”

This is physically false, but morally true. From man, in whom the nervous system is most perfectly developed, down to the polypi, the gradations are marked by a more and more imperfect nervous

system. It is sufficiently evident that life itself depends upon the same principle in every living creature, and that what we term life, is known only as nervous energy, power, fluid, or element; that sensibility depends on the same cause; and that as instinct rises by degrees up to the highest possible point, so does the nervous system become proportionably developed, and that in reasoning man the perfection is accomplished. It is known that the sensibilities of one differ from another, as the nervous or sanguineous systems are ascendant; that a particular class is muscular, another sanguineous, another nervous, and that their dispositions correspond. The ability to bear pain differs in man and man according to sensibility: some persons of acute nervous sensibility are what may be termed physical cowards; they shrink from every species of danger: while others with an indifference almost stoical, provoke injury by every means. The same differences are observable in animals. Mode of life will particularly augment either disposition, so that the one shall become a timid effeminate citizen, while the other shall possess all the temerity of an ancient gladiator. The tenacity for life depends entirely upon these causes. Where there is a highly developed, acutely sensitive nervous system, there will be much suffering, and with that suffering a proportionable danger. Thus one man dies under an operation that another cares little for, and suffers less. With animals the same phenomena is observable: the proboscis of the Elephant is acutely sensitive, and of which the animal is peculiarly careful, always raising it above its head when attacking an enemy. As we descend to the polypi and medusæ, the suffering is less, the tenacity for life greater; so that a "scotched Snake will be herself again," a lobster deprived of its claws will reproduce them. Thus the amount of suffering is wisely ordained to be as various in degree, as are the animals themselves in structure. Morally, the Poet is right, or otherwise this argument might be adduced as an excuse for cruelty—

"I would not enter on my list of friends
 (Though graced with polish'd manners and fine sense,
 Yet wanting sensibility) the man,
 Who needlessly sets foot upon a worm.
 An inadvertent step may crush the snail,
 That crawls at ev'ning in the public path;
 But he that has humanity, forewarn'd,
 Will tread aside and let the reptile live.
 The creeping vermin, loathsome to the sight,
 And charged, perhaps, with venom, that intrudes,
 A visitor unwelcome, into scenes

Sacred to neatness and repose, th' alcove,
The chamber, or refectory, may die;
A necessary act incurs no blame."

Nothing will better prove my allegation, that morally "a beetle suffers as much as when a giant dies," than the argument of Bishop Hall, who in discussing the subject of an equality of happiness hereafter, says—"Yet to conceive of these heavenly degrees that the *least* is glorious, so do these vessels differ, *though all are full.*" The amount is relative to the individual. A man feels more, absolutely, than a worm; but not relative to the capacity for suffering in each. The worm writhes and lives, but its sufferings are as great as they can be, and therefore does he feel, by comparison, as great a pang as when a giant dies. The poet here, by the bye, has, by choosing a giant, thrown the comparison to its utmost limit—Polyphemus to a worm.

The discourse between Claudio and Isabella continues; how natural is the vacillating feelings of a young, hopeful mind; oscillating between honour and the dread of death.

"*Claudio.*—Ay, but to die, and go we know not where;
To lie in cold obstruction, and to rot;
This sensible warm motion to become
A kneaded clod; and the delighted spirit
To bathe in fiery floods, or to reside
In thrilling regions of thick-ribbed ice;
To be imprison'd in the viewless winds,
And blown with restless violence round about
The pendent world; or to be worse than worst
Of those, that lawless and incertain thoughts
Imagine howling!—'tis too horrible!
The weariest and most loathed worldly life,
That age, ach, penury, and imprisonment
Can lay on nature, is a paradise
To what we fear of death."

How mysteriously, 'sublimely grand is this passage: therein is folded all the philosophy of life and death; the hopes and fears of man, the essentiality of life: let us think awhile, for we have all a personal interest in the subject. The man who could read unmoved, these lines, is less than little—is worse than wicked,—“to die and go we know not where;” death opens with a mystery—“to lie in cold obstruction and to rot;” death personified is horrible!—“this sensible warm clay to become a kneaded clod;” the life, the quick compelling nerves, the rounded form, the eloquent eye, the life, the

light of the world is gone—thus we leave the statue—“but the delighted spirit, to bathe in fiery floods—or to reside in thrilling regions of thick-ribbed ice,” &c.

Shakspeare here must be half unintelligible to the generality of his readers, who, ignorant of the philosophy and erudition of the passage, will lose half its grandeur. The penalty of fiery floods, of course, is easily understood as taught by the doctrines of the church; but the punishment of cold —

That very elegant scholar, Falconer, in his great work on *Climate*, remarks how religion is affected by climate :—“The effects of climate are very discernible in the rewards and punishments proposed by religion for obedience or disobedience to its precepts. Thus, the promise of a land abounding with milk and honey was a reward properly adapted to a hot climate, and especially to the Israelites, who had been accustomed to live in a country where the former of these was particularly esteemed.”* What can be more voluptuous than the Mahomedan Paradise?—a refinement upon the highest sensuality. The luxurious Asiatic promises himself a perpetuity of pleasure, without the satiety of sense; the Chinese sighs for nothing beyond an eternity of repose. Opposed to such dreams is the religion of the north: Zomaxis the Scythian and the Odin of the Saxons made heaven an illimitable forest, plentifully stocked with game; their happiness was to be found in hunting, military employments, and the joys of wine and company :† the precepts and pleasures of active life constituted their heaven. In moderate climates, where civilization has ever prevailed, more rational and manly enjoyments have been promised as the hereafter rewards of virtue; consisting of all those pleasures, physical and intellectual, to which the people have been attached on earth. Thus, in the sixth book of the *Æneid*, line 642 :—

“Pars in gramineis exercent membra palæstris
 Contendunt ludo, et fulvâ luctantur arenâ;
 Pars pedibus plaudunt choreas, et carmina dicunt.
 Nec non Threicius longâ cum veste sacerdos
 Obloquitur numeris septem discrimina vocum;
 Jamque eadem digitis, jam pectine pulsat eburno.”

Again, in the 679th line—

“At Pater Anchises penitus convalle virenti
 Inclusas animas.”

* The worship of the cow in Egypt was, no doubt, a political law.

† Herodot., lib. iv.; Strabon, lib. vii.

Milton, in that sublimely awful description of Pandemonium and the employment of the fallen spirits, has gone infinitely beyond Virgil:—

“ Part on the plain, or in the air sublime,
Upon the wing, or in swift race contend,
As at th’ Olympian games or Pythian fields;
Part curb their fiery steeds, or shun the goal
With rapid wheels, or fronted brigades form.
Others more mild,
Retreated in a silent valley, sing
With notes angelical to many a harp
Their own heroic deeds, and hapless fall
By doom of battle; and complain that fate
Free virtue should enthrall to force or chance.
Their song was partial, but the harmony
(What could it less when spirits immortal sing?)
Suspended hell, and took with ravishment
The thronging audience. In discourse more sweet
(For eloquence the soul, song charms the sense)
Others apart sat on a hill retired,
In thoughts more elevate, and reason’d high
Of providence, foreknowledge, will, and fate,
Fix’d fate, free will, foreknowledge absolute,
And found no end, in wand’ring mazes lost.”

We find the punishment, or the *torment*, of every country, corresponding in the same way with the sufferings of earth. “In climates, where they are exposed to inconvenience from excess of heat, the increase of it has been suggested as the mode of future punishment. Thus Homer speaks of the Titans being chained on burning rocks, which was a torment generally promised by the religion of hot countries; but in cold ones the contrary ideas prevailed.”* “The Hell, or Tartarus, there, was a place dark, cloudy, and destitute of food, and, above all, *extremely cold*, which was esteemed the most terrible circumstance of any, and from which the place derived its name and character. They gave it the name of Isaurin, that is, the Isle of the Cold Land, or Climate.”†

Milton, who, though he borrowed more, yet, from the value he added, owes less to the ancients than almost any author, has improved, perhaps, upon this idea of Shakspeare’s:—

“ Thither, by harpy-footed furies hal’d,
At certain revolutions, all the damn’d

* Falconer.

† See Smith’s *Gallie Antiquities*, p. 22.

Are brought, and feel by turns the bitter change
 Of fierce extremes, extremes by change more fierce.
 From beds of raging fire to starve in ice
 Their soft ethereal warmth, and there to pine
 Immoveable, infix'd, and frozen round,
 Periods of time ; thence hurried back to fire."

The vulgar will be vulgar still: hence the Hell of many a simple, warm-hearted Christian, is only the exaggeration of bodily pain: nor would they pardon the blasphemy of supposing that the penalty of fire was metaphorical. Had we adopted the *Nisthemi* of our Saxon ancestors, instead of the Egyptian Hell, it would have been more poetical, though, perhaps, less dreadful. "This was a place consisting of nine worlds, reserved for those who die of disease and old age. Hela, or Death, there exercised her despotic power; her palace was anguish; her table, famine; her waiters, were expectation and delay; the threshold of her door was precipice; her bed, leanness;" &c.*

The sceptic in religion may plead against the divinity of revelation† that the first principle of every religion—rewards and punishments—betrays an earthly rather than a divine origin, and which arises as much out of our selfishness as the fallibility of human judgment. The procedure and judgment of the Creator is *naturally* predicted by the verdict of an earthly judgment, as our ideas of the character and attributes of the Deity are formed by the highest possible perfections of man, or as our idea of eternity is formed, by the extension of time, beyond which human comprehension cannot pass.

Rewards to us would cease to be such, if there were no penalties, and the latter is as essential to mankind as the former: the thought of an hereafter penalty has afforded to the devotee no little of that satisfaction which his self-martyrdom seemed justly to merit; for what becomes of self-denial, if the ultimate doom be universally the same? Earth teaches punishment, for such is inevitable with our inexperience and ignorance; but in a more perfect and higher nature, suffering may not, perhaps, be a concomitant.

Claudio continues—"the weariest and most loathed worldly life, that age, ach, penury, and imprisonment can lay on nature, is a paradise to what we fear of death." This is infinitely finer than Hamlet's soliloquy—more positively true; this is "that pale cast of

* See Mallet's *North. Antiq.*, vol. i., p. 121.

† The word revelation here does not apply to the Bible, which, of course, must be received has an exception to the above remarks.

thought" which Hamlet refined upon—it seems too good for Claudio ; such a fear of death is peculiar to exalted and deeply thinking minds. The celebrated Johnson could not hear the word death lightly pronounced ; in an instant the current of his thoughts was turned awry, and with an inward dread he would solemnly pronounce that sublime passage of Milton, for " who would lose for fear of pain, this intellectual being."* The fear is not of *death*, but that uncertainty, which every mind capable of thought must, in spite of faith, sometimes dwell upon, the " dread uncertainty of after death," and, most horrible of all, the dread of annihilation, " to lose this intellectual being."

After these inimitable scenes, the mind is relieved by the simplicity of the Duke's descriptions ; indeed, nearly the whole of the next scenes are incidental, humourous, and light : the duet of Lucio and the disguised Duke is highly amusing.—*Exit Lucio*—

" Duke.—No might nor greatness in mortality
Can censure 'scape ; back-wounding calumny
The whitest virtue strikes. What king so strong,
Can tie the gall up in the slanderous tongue ?"

This is a salvo for all the wounds which candour inflicts ; for we are all kings in degree, and have, more or less, our royal liabilities.

Act the fourth opens with a song by Mariana. Though Shakspeare's rhymes are heavy, and more epigrammatic than delicate, yet in the occasional songs introduced in his plays I know of none in Anacreon more delicate and spirited.†

" Take, oh take, those lips away,
That so sweetly were forsworn ;

* "*Miss Seward*—There is one mode of the fear of death, which is certainly absurd ; and that is the dread of annihilation, which is only a pleasing sleep without a dream.

Johnson—It is neither pleasing, nor sleep ; it is nothing. Now mere existence is so much better than nothing, that one would rather exist *even in pain than not exist*. The lady confounds annihilation, which is nothing, with the apprehension of it, which is dreadful."—See *Boswell's Life of Johnson*.

† The pleasures of the mind are so ascendant that the most illustrious men have sighed for a heaven of such enjoyment. Hence it is that we so readily communicate that happiness by a direction to the source of it ; hence it is that I here distinguish the name of Tennyson, whose beautiful *Lyrics* are less known than they merit : one of the most beautiful is taken from this character of our poet. Never was written a more impressive and fascinating poem than *Mariana in the Moated Grange* ; the imagery is incomparable.

And those eyes, the break of day,
 Lights that do mislead the morn :
 But my kisses bring again,
 bring again,
 Seals of love, but seal'd in vain,
 seal'd in vain."

Isabella's pleading before the Duke is very fine ; first appealing loud for justice—the sense of her wrongs gives poignancy to her wit—she retaliates by the cutting irony of question—

 " is it not strange ?
 That Angelo's a murderer ; is't not strange ?
 That Angelo is an adulterous thief,
 An hypocrite, a virgin-violater ;
 Is it not strange, and strange ?

Then she hurls down the truth at once, by the confirmation of Angelo's guilt :—

" *Isab.*—It is not truer he is Angelo,
 Than this is all as true as it is strange :
 Nay, it is ten times true ; for truth is truth
 To the end of reckoning.
Duke.— Away with her.—Poor soul,
 She speaks this in the infirmity of sense.
Isab.—O prince, I conjure thee, as thou believ'st
 There is another comfort than this world,
 That thou neglect me not, with that opinion
 That I am touch'd with madness ; make not impossible
 That which but seems unlike : 'tis not impossible
 But one, the wickedest caitiff on the ground,
 May seem as shy, as grave, as just, as absolute,
 As Angelo ; even so may Angelo,
 In all his dressings, characts, titles, forms,
 Be an arch-villain ; believe it, royal prince,
 If he be less, he's nothing ; but he's more,
 Had I more name for badness."

These transitions and impetuous reasonings of Isabella are very grand ; our thoughts rush along with each successive change—we feel with her—we plead with her.

 " *Duke.*— By mine honesty,
 If she be mad, as I believe no other,
 Her madness hath the oddest frame of sense,
 Such a dependency of thing on thing,
 As e'er I heard in madness."

This "dependency of thing on thing" is not only one of the most incontestible evidences of mental sanity, but of a highly-educated mind. It is this one faculty which distinguishes one mind from another—which at once characterizes the scholar and the clown; it is the power to "re-word," as Hamlet says—knowing the dependency, the relation must be the same. Madness gambols from method, so does the undisciplined mind of the uneducated, unthinking boor: in both, the same aberrations occur, the difference is only in degree—the effect is the same, the cause only is different. Our "myriad minded" bard must himself have possessed an absolute judgment; his memory was the mere subservient virtue. Method confers on the soul a sort of divine prescience, by which every result is predetermined. Without method, a mind is either a gloomy wild, or a wilderness of sweets; either destitute and dark, or confused amid the ungoverned exuberance of its fancy. The "fine phrenzy of the poet," the ravings of madness, or the ill-dependent relations of ignorance, illustrate the old proverb, that "extremes meet."

I reluctantly leave this subject; but it must be deferred until considering the character of Hamlet—or rather the biography of Hamlet, for the incidents of the play serve but to develop his mind; all centres in Hamlet, every line seems like a ray of light converging to one point.

What a fine illustration of method is this speech of Isabella:—

"Isab.—I am the sister of one Claudio,
Condemn'd upon the act of fornication
To lose his head; condemn'd by Angelo:
I, in probation of a sisterhood,
Was sent to by my brother: One Lucio
As then the messenger;—

In brief,—to set the needless process by,
How I persuaded, how I pray'd, and kneel'd,
How he refell'd me, and how I replied;
(For this was of much length,) the vile conclusion
I now begin with grief and shame to utter:
He would not, but by gift of my chaste body
To his concupiscible intemperate lust,
Release my brother; and, after much debatement,
My sisterly remorse confutes mine honour,
And I did yield to him: But the next morn betimes,
His purpose surfeiting, he sends a warrant
For my poor brother's head."

What a "dependency of thing on thing!" In a few lines is

compressed the beginning, middle, and end; every line is the direct transit to what follows. Let the reader compare this speech with the gambols of Mrs. Quickly, or the Clown, in the first act of this play; the comparison is perfect.

The play ends by the exposure of Angelo's guilt, and reparation to the persecuted Mariana. The incidents are somewhat confused, and the sudden absence and re-appearance of the Duke as the Friar, seems awkward. Angelo's speech fills up the measure of our disgust for his character. The determined and satanic villainy of Iago, is less offensive than the pusillanimous repentance of Angelo. It may be received as a truth, that a stern unforgiving rule is the weakest of all virtues. The wisest men are, *ceteris paribus*, always the most merciful, because their appreciation goes beyond the act.

Z.

ON THE CONNECTION OF PHRENOLOGY WITH PHYSIOGNOMY.*

By J. L. LEVISON.

THE science of Phrenology is one based on observation and induction. Its professors assert that it enables them to decide on the number of the *connate* mental faculties, their relative development, and that it thus furnishes the means of ascertaining the probable character of any individual, or, in other words, what are his natural tendencies. On the other hand, the advocates of Physiognomy claim for their science, data for obtaining a correct knowledge of character; and they assert that its rules are also deduced from numerous observations on men and animals. It will, therefore, be the object of this paper to treat of the relative merits of these two sciences, and to point out the greater importance of Phrenology when compared with Physiognomy, and subsequently to prove that it is only when they are studied together that the latter assumes anything of value for practical purposes.

Physiognomy is but the outward manifestation of the mental faculties, and only really so when some strong feeling or sentiment communicates a particular action to the facial muscles, which, in

* The substance of this paper forms part of one read by Mr. Levison, in 1827, before the members of the Hull Society for Phrenological Inquiry.

time, fashion the hard outline of the features. But when there is only a moderate capacity—that is, when there is nothing decided in a character—the face will then be a bad index to read, particularly if we desire to understand the subject in a definite manner. The features, when in a quiescent state, can only furnish certain arbitrary rules to judge by, as all kinds of disposition, every variety of temper, and every modification of the intellect, are found associated with similar *typical* forms of noses, mouths, chins, &c. I know a person with high mental qualifications, having features of a Roman cast, and another, equally talented and moral, with features resembling some kind of Monkey. The *expression* may be extremely similar in persons whose features are nevertheless very different. In these cases, the persons have invariably a similar *cerebral* organization, although they are unlike in the form of their features. Hence, in the science of Phrenology, there is considerably more certainty in our examinations than there is in Physiognomy, although both are interesting in forming conceptions of character.

We have abundant evidence that there exists a general harmony between the features and the head, similar to that which is to be traced throughout the whole of the bodily organs of an individual; there is an *individuality* in every organ. But how absurd would be the attempt to decide the mental qualifications of any one by his peculiar gait or stature, or by the form of the hand or arm, &c.! It is quite another thing when we have to judge by means of the cerebral organs: having ascertained their numbers and their functions, and how far the mental power is modified by the size of the whole brain, or its separate organs, under certain conditions,* we may be more accurate than by any other species of investigation. Our knowledge of the functions of the cerebral organs is as correct as the certainty of our knowledge of the functions of the eye or the ear. I now proceed to offer some proof of these statements. When there is anything like a definite character, the phrenologist cannot fail to recognise it; but the individual he examines may have national or family features similar to many commonplace personages. These may be considered exceptions to physiognomical rules, but they prove that these rules are less to be depended upon than are the phrenological data. Suppose a person is examined with the base of the brain and back of the head (basilar and occipital regions) larger than the moral sentiments and intellectual faculties; we

* The modifications alluded to are the bodily constitution or temperaments.

could at once declare his tendency to animal and selfish propensities, and we could specify his temper and disposition : nay, all this could be done without any inspection of the nose, mouth, or chin, &c. ; but, in most instances, I admit that these features would indicate what is called "an animal face," though the most gifted disciple of Lavater would be puzzled to name particulars of such a person's disposition, &c. Or suppose the converse of the latter example :—the forehead ample, and the whole superior region much elevated, whilst the head, when viewed in front, presented it as narrow *compared* to the height. The merest tyro in Phrenology could, by mere manipulation, pronounce such an organization as indicative of great intellectual capacity and high moral perception ; and this without any previous acquaintance with the person examined, or any knowledge of his facial expression.

Another proof of the superiority of Phrenology is the fact that, to obtain a correct likeness, the head must be a *fac-simile*. My attention was first called to the importance of this to the painter and sculptor from the following circumstance :—I had occasion to call on Mr. Higson, House Surgeon of the Hull Infirmary, when he pointed out a bust in plaster, and asked me whether I knew who it was like. I gave a hesitating answer, guessing it might be intended for his own, because the bust had a collar and white handkerchief round its neck, similar to the manner in which Mr. Higson himself used to wear them. On my exclaiming against it as a likeness, he supplied the following explanation : an Italian artist had taken his mask in plaster, which is a *fac-simile* of his features ; but as he objected to have his head taken in the same way, the artist supplied "a fancy sketch," giving him, instead of his own high and well-formed head, one extremely narrow, and rather of an *amorphous* shape : so that his most intimate friends did not know him, or even surmise that it was ever intended for him : he, therefore, dressed it in the manner described, and some, like myself, *guessed* against our own ocular information.

These and similar cases prove that the head is actually more important than the features as a means for recognising a likeness, and to individualize a person it is still more so. The slightest depression or elevation of the eye-brows more or less than they should be, destroys the *identity* of a portrait ; in other words, a greater or less development of any of the perceptive faculties alters the intellectual character, and destroys the individuality of a person. If this be the case in the small group of organs which affect the form of the eyebrows, how much more so must it be when there is a greater

elevation of the head than there should be, or too much depression of the superior region of the moral sentiments, or if the animal propensities are rendered larger or smaller than in the original !

With these general introductory remarks I must, for the present, conclude ; many extremely interesting proofs of their general accuracy are in my possession, and may be communicated at some future opportunity.

Doncaster, Nov. 13, 1836.

(To be continued).

SOME REMARKS ON MUSEUMS OF NATURAL HISTORY.

BY JOHN EDWARD GRAY, F.R.S., &c.

STAYING lately in the neighbourhood of Newcastle-upon-Tyne, I repeatedly visited the Museum of the Natural History Society of that town, and I was much pleased with the collection, and the admirable state in which it is kept ; but I was more especially gratified with the liberality of the subscribers in throwing the Museum open, without the necessity of an introduction, or any charge to their fellow-townsmen—a facility of access scarcely to be expected, except in a national establishment like the British Museum. The museum of this society was formerly opened to all classes in an evening, when it was lighted up for the occasion ; but the visitors who availed themselves of the privilege were so numerous, that it was impossible for them to inspect the collection with advantage. The committee, in consequence, was under the necessity of altering their mode of admission ; they now issue a certain number of tickets each night, which are sent to the workmen of the different factories in the neighbourhood, in rotation, for the admission of the holder and his family, or to such persons as make previous application at the institution ; a plan which has been found to give general satisfaction.

The anniversary meeting occurred during my stay in Newcastle, and it is characteristic of the liberality of the subscribers, that one of its members rose and inquired if the council had taken into consideration how *increased* facilities could be given for the admission

of the public to the museum. The collection of the Antiquarian Society, (which contain many very interesting specimens of art, deposited in another part of the building), is, also, in a like manner, open gratuitously to the inspection of the public; and I sincerely wish this liberality was more generally displayed in similar societies, as I firmly believe that, if such a plan were adopted, it would have the effect of increasing the funds of the institution, from the number of persons who would take an interest in its prosperity; and the subscribers would have the gratification of knowing they were promoting the spread of knowledge, good taste, and feeling, among their fellow townspeople. This Society, besides setting so good an example to other institutions, has distinguished itself by the energy and scientific knowledge of many of its members, who have published papers in their *Transactions* which may rank with productions on similar subjects in the *Transactions* of our metropolitan societies.

Many institutions are open by an order from, or an introduction by, a subscriber; but in most of these I have observed that admission is granted on application to the Curator of the institution. At Liverpool, Edinburgh, Glasgow, and Worcester, the museums are open to any visitor on the payment of one shilling, as in some of the proprietary museums which were formerly exhibited in the metropolis. But the Natural History Society of Manchester, as far as I am aware, stands alone for the exclusive conduct of its supporters. In my situation in the British Museum, I have had several requests made to me from residents in Manchester, to compare specimens of British birds, or other objects of the kind, with similar specimens in the collection under my care; for the artisans of Manchester, like the weavers of Spitalfields, appear to be very fond of the various branches of Natural History, British Ornithology, and Entomology in particular. Some of these persons, who generally appeared to be workmen, stated, as an excuse for what they considered an intrusion on my time, that they, or their friends, could not make the comparisons in their own town, though its museum contained a good collection of British birds, &c., as no resident was allowed to visit the Museum but members of the society, and that the members were elected by ballot, so that there was no hopes of their being admitted, even if they could afford to pay the subscription. I did not pay much attention to their complaints, and they entirely escaped my recollection. Being near Manchester last year, I passed through the town, on my road to London, for the purpose of examining the museum. On asking my way to it of a gentleman whom I happened to meet in the street, he inquired if I had an order, as I could not

otherwise be admitted. I stated my occupation, and observed that I had visited most of the British and Continental museums, and had never been refused admission; I therefore did not imagine an order would be requisite. He assured me it was indispensable, and kindly offered to give me and my friends a personal introduction. Even with these preliminaries, I must say that I was not prepared to see the following inscription painted in large letters on a black board, hanging from the door; on reading which the complaints of my Manchester visitors immediately occurred to my memory; it runs thus:—

“I.—No gentleman residing within three miles of Manchester, not being a subscriber, can be admitted.

“II.—No visitor can be admitted without a personal introduction by a proprietor, or by a written order, with the name of the party to be introduced.

“III.—No servants or young children can be admitted.”

I had the pleasure of meeting one of the leading members of the society in the building, and had some conversation with him on the subject of the board, when he informed me that it was considered necessary to make such regulations, otherwise they would not be able to support the institution, as many persons who are now subscribers would come as visitors. I must say that I doubt the policy, and regret the feeling which should dictate such regulations, especially the last, as I should have thought the admission of children, with a view of imparting a taste for the beauties of Nature in the rising generation, would have been one of the most ardent wishes of the subscribers. I took a copy of the board, being desirous of collecting information relative to the regulations of local institutions, in the expectation of being again examined before the Committee of the House of Commons on the British Museum. This document was laid on one side, with other papers on the subject, when, a short time ago, I accidentally saw the following remarks on this institution, in Mr. Swainson's *Preliminary Discourse on the Study of Natural History*, (published in Dr. Lardner's *Encyclopedia*), which certainly conveys to me a very erroneous impression of the regulations of the institution. Indeed, one would almost have thought that the author had the regulations of the Newcastle Society in his mind, when he wrote the beginning and latter part of the account, rather than that of the institution to which he refers. Speaking of provincial societies, this author observes:—“The most important of these is the Natural History Society of Manchester, a town long and justly famed, not only for its commercial importance, but for its

attachment to the physical sciences; an union so rare, that we know not where to find its parallel. The society in question has its periodical meetings, and is supported by the annual contributions of a very considerable number of members residing in that part of Lancashire. We have had the gratification of seeing what has been the result of this liberality; and we hesitate not to say that the zoological collection of this society, with a solitary exception, is second to none in the Metropolis of Great Britain. Besides a very fine collection of native birds, it is rich in the ornithology of tropical America and of the United States. The collection of insects is also extensive, but that of the Testacea yield only to the British Museum in the number, the rarity, and the interest of the specimens. The shells, in fact, amount to between 5000 and 6000 species; very many of which are undescribed, while others formed the chief ornaments of the Bligh, the Angus, and the Swainsonian collections.* This fact proves that commercial and manufacturing occupations are by no means unfavourable to the prosecution of intellectual studies. This is apparent, not only in the higher and more educated classes of Manchester, but is very general throughout the operative classes of the community. We were particularly struck one day, during our visit, at seeing two or three individuals of the latter description attentively looking at some specimens in the museum, and comparing them with others brought for the purpose. The superior tone and manners of these humble admirers of Nature are very striking, and at once shew the effect of such tastes upon the inward man."—p. 325-326. It may be said that the society has altered its rules since this was written; but by the accounts given me by the Manchester collectors, and by the member whom I met at the museum this can hardly be the case.

* The society does contain a fine collection of British birds, which are beautifully preserved; but the extent of the collection of shells, as above given, is, in my opinion, very much over-rated, as I know several private collections of a far larger size and greater importance; for I did not observe a single remarkably or extremely rare shell in the collection, and I should say, even with the recent addition (and some of the shells purchased of Mr. Cuming are the best in the collection), that it scarcely consists of more than 2000 species, including many duplicates, especially of the more common species. The Swainsonian collection, when it was purchased for £650, consisted of 6180 specimens and 2511 species. It then contained "the chief ornaments of the Bligh and the Angus" collection. But we are informed by one of the committee who purchased it, that "there were many duplicates" of the more common shells, and "that many of the multivalves were only single valves."

It was with the greatest pleasure that I heard it stated in the Report of the Newcastle Society, that, notwithstanding articles of great value were exposed on the cases without any cover, they had never lost a single specimen, nor had any part of the collection been injured by the visitors. This account quite agrees with my own experience in the British Museum, where there have been occasionally more than 6,000 visitors in a single day. During the last twelve or thirteen years I have been in that institution (and the greater part of this time I have had the immediate superintendence of the zoological part of the collection), I do not recollect a single instance of wilful injury, and, indeed, hardly of carelessness, on the part of the visitors, though now and then a pane of glass may be cracked; but that is scarcely to be avoided from the frequently crowded state of the rooms, with glass cases in every direction. From my experience in the British Museum, and in other situations, I think that the English public have been most unjustly abused in this respect; partly arising from that delight which the English have in complaining of their countrymen, and praising foreigners at their expense, and partly by designing persons, who have profited by places being kept from public view, except on the payment of fees. For example: I do not think, (though the accusation has been repeatedly made) that the English are more inclined to write on walls than our continental neighbours,* except that they have not the constant dread of the *surveillance* of the police, which the French appear always to have before their eyes. In those places where it can be done with little chance of detection—as in the passages of the Courts of Justice, in Paris—I have seen the walls much disfigured by writing in charcoal instead of chalk; the French hand in which they were written, and the names, at once shewing it was the work of natives.

The French police interfere in the most trifling cases, and their conduct in this respect must afford much amusement to an observant Englishman. As an instance of their severity, I have seen visitors to the museum of the Garden of Plants rebuked, in no very measured terms, for merely accidentally touching the glass of the cases with their fingers in pointing to a bird; and for any infraction of the rules of that institution they are immediately arrested by the military guard who have the care of the rooms during the public exhibition. I was once arrested myself, because Mrs. Gray was car-

* I never recollect to have seen an instance of it in the part of the British Museum dedicated to the Natural History collection.

rying in her hand a roll, consisting of half a sheet of letter-paper, on which we had been making some notes before the gallery was opened to the public, but which we should have put out of sight previous to the visitors being admitted. They led us, with a guard of three soldiers, along the galleries, to the guardian of the collection, who immediately set us at liberty.

In other parts of the Continent, as in Switzerland, where the inhabitants are not under the *surveillance* of the police, the walls are as much disfigured by writing as in England; and I need only instance the chapel of William Tell. This remnant of barbarism, therefore, which has been called by some "English taste," is not peculiar to our country, and I am inclined to believe that a great improvement in this respect is taking place amongst the English; indeed I have no doubt, as the education of the people advances, it will rapidly disappear. I feel assured that the best and most speedy way to eradicate the evil will be to adopt, in the various local institutions, the liberal example of the Natural History Society of Newcastle, as the means best calculated to impart a taste for the beauties of the creation among the people; and if the picture galleries, churches, cathedrals, and other buildings containing works of art in the country, were freely opened to their inspection, it would have the effect of giving them a taste for the fine arts. I think the exemplary behaviour of the visitors in the British Museum, and in the museum of the Newcastle Society, fully justifies a similar trial in other places.

I am inclined to believe it is in consequence of the general good conduct of the public that the governors of the British Museum have been able to give such facilities to the visitors in general—facilities that are only to be compared to those granted to individuals recommended to the directors of the Paris Museum; for it is only with this institution that the British Museum can be compared, as most of, if not all, the other continental museums are either attached to universities for the use of the professors and their students, or are the property of private societies, as that of Frankfort. Indeed, the Paris Museum was instituted for the purpose of teaching medical botany, and was subsequently extended to the other branches of Natural History; and it is for this reason that the professors regard the collections as formed for their own use, and do not allow any person to take notes without their permission, which is, in general, liberally granted, though exceptions have been made if it interfered with any work which the professor or his aid might be engaged upon. On the contrary, at the British Museum,

on the public days, the visitors may purchase a synopsis, giving a description of the contents, or take any other work with them to compare the descriptions, or plates, with the specimens, or even compare specimens themselves, which is often done to a great extent : and they may take any notes, description, or drawing of the specimens, without fear of their being interrupted. Should the parties require a more accurate examination of, or wish to make drawings from, any of the specimens, two days in each week are set apart for their use.

In speaking of the Paris Museum, I may refer to an advantage that collection has possessed which has not been enjoyed by any other ; that of having all the specimens from the local collections in France sent to it, from which its professors selected what specimens were wanted for their collection, and the duplicates were then divided into series illustrative of the arrangement of the animal kingdom, and one of this series was sent back to each of the local collections. This is an arrangement that could only be made in a country like France, where all such collections are public property. Napoleon, also, sent to it the specimens which were taken from the museums of the various towns over-run by his armies, few of which were returned at the Peace ; for even Holland was satisfied, after a time, to receive duplicates from the French collection in return for the specimens taken from the celebrated museum at Amsterdam. Of late years the Dutch government have constantly employed eight travelling Naturalists in various parts of the world, to replenish its collection ; and the duplicates are used to increase their collections by exchanges with other museums, or are distributed to the local collections.*

With the advantages that the Paris Museum has enjoyed, it ought

* The museums of Leyden, Berlin, and Vienna, also employ travelling collectors, but not to the extent of the French government. It is curious to observe the effect of this manner of obtaining specimens in the various institutions. The collection is generally richest in the productions of those countries where these collectors have been stationed : thus, the Berlin Museum is rich in Mexican, Cape, and Red Sea animals ; the Vienna in Brazilian ; and Leyden in Javanese, Japanese, and Cape specimens. The Paris Museum, from the number of its collectors, approaches nearer to the English collections, which entirely depend on the industry of travellers or the enterprise of her merchants ; and it is, I believe, from the great extent of her trade that more specimens are brought to this country than to all the rest of Europe together, as the foreign collectors appear to have discovered by the repeated visits they pay to England for the purpose of purchasing specimens.

to be the richest collection in the world ; but this is by no means the case : the display of *mammalia* at Leyden and Frankfort being certainly better. The collection of birds at Paris is very fine, but not very much larger than that of the British Museum or of the museum of the Zoological Society of London ; and, it is said, considerably smaller than that of Leyden ; but hitherto the birds in the Leyden Museum have not been exhibited to the public. The collection of shells at the Jardin des Plantes is not to be compared with some private ones in London, and is not so large as that in the British Museum.

It is not unusual to hear persons speak in raptures of the beasts in the gardens of the Paris Museum ; yet it would be madness to compare them, in external appearance, to the collection of the Zoological Society, in London. I should not make these comparisons (for I consider these institutions as different in their constitution as is the character of the two nations) had I not constantly heard persons making similar comparisons, and almost always to the disparagement of the English institutions. In my repeated visits to the Continent, I have, been induced to collect statistical accounts of the several institutions, and to observe their various peculiarities, with the view of introducing into the British Museum any real improvements I might discover.

Blackheath, Kent,
Nov. 5, 1836.

COMPARATIVE ABUNDANCE OF THE CORN AND
YELLOW BUNTINGS, (*Emberiza miliaria and citrinella*)
IN ENGLAND.

I CAN say, without hesitation, that in almost every part of England I have seen the Yellow Bunting as twenty to one of the Corn Bunting : in Northumberland, Cumberland, and Westmoreland, I can state, positively, that the Yellow Buntings are still more numerous in proportion ; and although I have explored almost every inch of parts of these counties, I never remember to have found a nest there.

W. C. HEWITSON.

Chesterfield, Derbyshire, Oct , 1836.

NOTES ON NATURAL HISTORY BOOKS.

No. I.—INSECT ARCHITECTURE.

Insect Architecture, *Insect Transformations*, and *Insect Miscellanies* (all published in the *Library of Entertaining Knowledge*), are books too well known to the public to require a lengthy general criticism of their merits. Suffice it, then, to say that they may be regarded as excellent works, containing many original discoveries, shrewd explanations, masterly refutations of errors, and powerful overthrows of false theories, and evincing, in almost every page, very great literary research, considerable judgment in the selection of facts from former works, and much ingenuity in the arrangement of them. They are just the works to be first read by persons desirous of commencing the study of Entomology, and they may be consulted with profit even by those who are proficient. Somewhat similar opinions of these works have been expressed by some of the most competent judges.

MASON BEE (*Anthophora retusa*), p. 33.—“On the north-east wall of Greenwich Park, facing the road, and about four feet from the ground, we discovered, Dec. 10, 1828, the nest of a Mason Bee, formed in the perpendicular line of cement between two bricks. Externally there was an irregular cake of dry mud, precisely as if a handful of wet road-stuff had been taken from a cart-rut and thrown against the wall; though, upon closer inspection, the cake contained more small stones than usually occur in the mud of the adjacent cart-ruts.”

This species of Bee is also said to build a mud-hive against the side of a tree or bank; but a writer in the *Entomological Magazine* (iii., 313) says he has known many instances of there being “no external building whatever, the Bees entering the face of the bank by perfectly round smooth holes. Another kind of Bee, *Melecta*, was [in one instance, at Birch Wood] continually arriving with the *Anthophoræ*, and entering their holes; it appeared to be on a perfectly friendly footing with the rest of the community. It is the economy of this Bee to lay its eggs in the nest of the *Anthophora*; the grubs, on hatching, devour the food provided by the *Anthophoræ* for their own young, which, thus deprived of their support, shrivel up and die.

CELLS OF SOME SPECIES OF BEE FORMED IN AN ELDER BRANCH, p. 51.—“That bees of similar habits, if not the same species as the

Violet Bee (*Xylocopa violacea*) are indigenous to this country, is proved by Grew, who mentions, in his *Rarities of Gresham College*, having found a series of cells in the middle of the pith of an old Elder branch, in which they were placed lengthwise, one after another, with a thin boundary between each." As he does not, however, tell us that he was acquainted with the insect which constructed these, it might as probably be allied to the *Ceratina albilaris*, of which Spinola has given so interesting an account in the *Annales du Muséum d'Histoire Naturelle* (x., 236).

The species whose cells Grew found, may have been the rare *Ceratina cærulea*, which has been taken on the Viper's Bugloss (*Echium vulgare*) near Birch Wood (see *Entomological Magazine*, iii., 310). In the magazine just mentioned (iii., 413), Mr. Edward Doubleday says that having, in Nov., 1835, cut off a branch of Elder, which projected from a hedge at Epping, "I noticed that the pith of it was removed, and on examining it I found that some insect had evidently entered at the top of the branch, which had apparently been broken off some time previous. The pith she must have removed, for the whole length, about eighteen inches, *was divided into little cells*, in each of which was an oval cocoon, containing a whitish larva. From the many fragments of legs, wings, &c., of *Diptera* in the cells, these larvæ evidently belong to some one of the fossorial *Hymenoptera*. I think that Reaumur mentions a similar nidus in a dead branch of Oak." It is a pity that Mr. Doubleday did not rear the larva, so that the species might have been ascertained.

HORNET'S NEST, p. 79.—"The Hornet does not build under ground, but in the cavities of trees, or in the thatch, or under the eaves of barns. In the *Magazine of Natural History* (viii., 628), Mr. J. R. Rowe states, as an exception to the above assertion, his having seen, in July, 1834, a Hornet's nest in a bank of sand and heath. "This nest," he says, "was in a recent state, there being only four or five Hornets, and but few cells; the greater number of the latter occupied by grubs."

CELLS OF A BEE HIVE, p. 111.—Much has been said on the ingenuity of Bees in constructing cells of an hexagonal form; and it has been asserted that there is no other form equally saving of room under such circumstances: but in Barrow's *Tour through Ireland* this opinion is shewn to be erroneous. I have not his work at hand, or would quote his remarks, but the reader will find them somewhere before p. 100 of the first volume.

THE HIVE BEE'S PROGRESS IN AMERICA, p. 142.—"In this

country Bees are not found in a wild state, though it is not uncommon for swarms to stray from their proprietors. But these stray swarms do not spread colonies through our woods, as they are said to do in America. In the remoter parts of that continent there are no wild Bees: they precede civilization; and thus, when the Indians observe a swarm, they say 'The white man is coming!'

Washington Irving has given an account of the progress which the Honey Bee is making westward in America; and the same fact is mentioned by Bartram in his *Travels through N. and S. Carolina, Georgia, E. and W. Florida, &c.*, 1791. "In conversation with a Dr. Grant, in company with whom he happened for a short time to travel, Bartram inquired how it was that westward, among the Creek Indians, he had seen no Bees? Dr. Grant replied that there were few or none west of the Isthmus of Florida, and but one hive in Mobile, which was lately brought from Europe, the English supposing there were none in the country, not finding any when they took possession after the Spanish and French. 'I have,' says our traveller, 'been assured by the traders that there are no Bees in West Florida, which to me seems extraordinary and almost incredible, since they are so numerous all along the eastern coast, from Nova Scotia to East Florida, even in the wild forest, as to be thought, by the generality of the inhabitants, aborigines of this continent.' At the present time the Honey Bee is abundant throughout the United States, both as a denizen of the forest and a dependant on man. Generally speaking, the settler in the back woods prefers the precarious but luscious supply afforded by those swarms which have deserted man, and taken up their abode in fissures of rocks or hollows of trees, to the more regular but less abundant supply from hives of his own."—*Entomological Magazine*, iii., 423.

SAW FLIES (*Tenthredinidæ*), p. 152.—As Mr. Rennie's account of the Saw Flies is imperfect, though correct so far as it goes, I shall here introduce Mr. James Fennell's paper on *Trichiosoma lucorum*, which was read some time ago before the London Natural History Society—a society now no longer in existence:—" *Trichiosoma lucorum* is an interesting insect, belonging to the division *Mandibulata*, order *Hymenoptera*, and family *Tenthredinidæ*. The *Tenthredinidæ*, commonly called Saw Flies, in their history, are very entertaining to the entomologist; while, in their natural propensities, they are regarded as destructive by the gardener, whose trees and plants are frequently much defoliated by the larvæ, as also by the parent fly, who cuts deep fissures in the branches by means of its

beautifully constructed *saw* (hence the common name), for the purpose of depositing its eggs therein. The mother Saw Fly, having selected a branch adapted to her object, alights upon it, and commences to cut a groove in it with her saw, which is situated near the anal extremity of her body, and is well fitted for its office, being furnished with two rows of teeth capable of separate and continued action, so that when one row of teeth is protruded forwards, the other is drawn backwards, thus giving the insect all the advantage of two saws. This instrument is not only a saw, but is also a rasp; for each of its teeth, upon examination, is found to be furnished with several sharp and parallel ridges: in which respect it possesses a superiority over the saws used by our mechanics. Many inventions in daily use among us, we know, were originally suggested by the structure of animals;* but it strikes me as somewhat strange that no one has hitherto made a saw upon this principle. We further find that this instrument is not merely a saw and a rasp, but is likewise an ovipositor, having a hollow channel passing through it from the base to the apex. When the groove in the branch is ready for the reception of the egg, the saw ceases its operation, and next performs its extra duty of ovipositor by depositing, in proper order, the eggs as they issue from the oviduct. So soon as an egg is laid, the ovipositor is retracted a little, but speedily again protruded; and a small quantity of liquid matter, of a frothy appearance, is then observed to fall upon the egg, and is probably intended to gum it to its bed. After the eggs are deposited in the groove, the cut in the branch is not conspicuous at first, but it at length assumes a blackish colour, and becomes raised. 'This increased elevation' is said, by the author of *Insect Architecture*, who appears formerly to have devoted considerable time and attention to the study of insects, not to be 'owing to the growth of the bark, the fibres of which, indeed, have been destroyed by the ovipositor saw, but to the actual growth of the egg; for when a new-laid egg of the Saw Fly is compared with one which has been several days enclosed in the groove, the latter will be found to be very considerably the larger.' He also states that, as the egg 'continues to increase, it raises the bark more and more, and consequently widens,

* We think some philosophers are much too fond of determining the habits and inventions of man, to be derived from the lower animals; as if the lords of the creation were not in possession of innate faculties to render him competent to achieve anything original! Some have actually gone so far as to state that the idea of vocal and other music had its origin in the singing of birds!—*Ens.*

at the same time, the slit at the entrance, so that when the grub is hatched, it finds a passage ready for its exit. The mother fly seems to be aware of this growth of her eggs, for she takes care to deposit them at such distances as may prevent their disturbing one another by their development.'” The circumstance of the eggs growing as here stated is singular, yet not peculiar to this family, for the eggs of some other insects increase in size after being laid; but it affords, I may remark, a slight connection between insects and plants, as of some of the latter the seeds, which are equivalent to the eggs of oviparous animals, visibly expand previous to germination. Such is a sketch of the general habits of the *Tenthredinidæ*; but it must not be accepted as applicable, in all its particulars, to the species under notice, whose history I am sorry I cannot minutely detail, though I do not suspect that, if it were fully described, it would present us with ought remarkably different from this. Should the eggs of the *Trichiosoma lucorum* be discovered to increase in size, as do those of the majority of *Tenthredinidæ* (and which I have no reason to doubt they do), then the insect becomes doubly interesting, by its furnishing us with a similar fact to that observed in the seeds of plants, and consequently forming a minor point of union between the animal and vegetable creation; while, in the circumstance of its antennæ resembling those of the *Papilionidæ*, or butterfly family, a connection is formed between the orders *Hymenoptera* and *Lepidoptera*. The flight of *Trichiosoma lucorum* probably resembles that of most of its congeneric species in being low and short; a circumstance that invalidates the opinion of those who assert, merely because they see Saw Flies suddenly appear in great abundance, that they come from the sea. I have but once seen this insect alive in its perfect state, and then it seemed to be of a very sluggish nature: I have seen the larvæ three or four times. My friend, Mr. R. Ogilvie, and myself, when in company on a Natural History ramble, had once the pleasure of witnessing a very remarkable circumstance in the larva of this insect, which, upon being touched, spirted out of the pores of its body a thin, watery fluid, in fountain-like jets, of some height, comparing them to the size of the animal. This fact I have recorded in the *Magazine of Natural History* (vol. vi., p. 157); but, in consequence of having been misled by a figure in Shaw's *Zoology*, I have attributed the fact unintentionally to the larva of *Tenthredo Amerinæ*, a much rarer species. In the above journal I have expressed my opinion that the object of its ejecting a liquid upon being disturbed, might have been to repel our liberties, or to induce us to abandon our capture, as the

ejection of fluids is a natural plan of defence resorted to by several animals of different classes: as, for example, by the Llama, Skunk, &c., among the *mammalia*; the Petrel and Vulture among birds; the *Sepia* among fishes; the Catchweed Beetle, (*Timarcha tenebriosa*), the Oil Beetle (*Proscarabæus vulgaris*), the larvæ of *Cerura vinula*, &c., among insects.*

Of the hard cocoons of *Trichiosoma lucorum*, I have seen several specimens; and they are, as Mr. Curtis observes, pretty common round London, on the branches of hedges. In what manner these are formed, does not appear to have been discovered; but, from examination, I am led to conceive that the ligneous materials (for of such they seem to be constituted) are first masticated into a paste, which is then spread into the required shape, its tenacity and durability being, perhaps, obtained by the aid of a glutinous secretion. When the insect has escaped from its cocoon, this exhibits the appearance of a deep cup furnished with a round lid, the hinge of which is so elastic, that the two parts are pressed so closely together, as to render the line of their division not at first very observable."†

* "The larvæ of this insect (*Trichiosoma lucorum*) having been peculiarly abundant this season, on all the Hawthorns around Dundee, I have had," says Mr. William Gardiner, "an opportunity of observing their habits, and can corroborate the curious fact of their ejecting from the pores of their bodies, a liquid, in thin fountain-like columns, as stated by Mr. Fennell in the *Mag. Nat. Hist.*, vi., p. 157. * * * The doubt expressed in this Work, vol. vii., 266, of this habit being usual to the species, has probably arisen from the circumstance of its being manifested only during the earlier stages of the insect's existence; for, when the larvæ appears in its last coat, no trace of this habit remains. The fluid, which is of a green colour, and strong disagreeable odour, is spirted with such violence, as often to force it to the distance of more than a foot from the insect; and its use is, perhaps, to defend the larva, in its more tender state, from the annoyance of the Ichneumon flies. In the last stage of its growth, the head, which, in the previous stages, was black, is of a bright red colour, gradually softening into yellow towards the sides; and the body appears less mealy-like, but is thickly covered with white transverse ridges. They feed only during the night, and repose themselves, half coiled up, on the under sides of the leaves throughout the day. They first made their appearance here, this season, about the 22nd of June (1834), and in the beginning of August, were transformed into pupæ."—*Mag. Nat. Hist.*, viii., p. 628.

† "I have found," says Mr. Gardiner, "the beautiful figure and description (of the cocoon), with which Mr. Woodward has furnished us in *Mag. Nat. Hist.* v., 85, perfectly accurate, with the exception of his supposing it possible that the fibrous appearance of it was owing, in part, to 'the agglutinated hairs of the larva.' The larva, unfortunately, cannot apply its hairs

FOOD OF THE LARVÆ OF EPHEMERÆ.—Mr. Rennie says that the larva of the May Fly (*Ephemera*) “feeds, if we may judge from its *egesta*, upon the slime or moistened clay with which its hole [in the banks of rivers, &c.] is lined.” I have often kept numbers of the larvæ of *Ephemeræ*, and observed that when any of them died they soon disappeared: I believe the survivors used them as food.

SLEEP OF ANIMALS, p. 261.—“All observers agree that Ants labour in the night, and a French naturalist is, therefore, of opinion that they never sleep; a circumstance which is well ascertained with respect to other animals, such as the Shark, which will track a ship in full sail for weeks together.” The Golden Carp (*Cyprinus auratus*), according to Dr. Hancock, is never observed to sleep.—See *Quarterly Journal of Science*, No. 16, p. 291.

WHITE ANTS (*Termites*), p. 287.—At the Entomological Society’s meeting, on February 1, 1836, was exhibited a specimen of the nest of the White Ants, *Termites*, being the first brought to this country. It was of small size, though some are as high as ten or twelve feet. Several spherical case fuzes, destroyed by the Wood Ant of Barbadoes, were also exhibited, from the United Service Museum, to which collection they had been forwarded by Lieut. Col. Biron. At a previous meeting, on Jan. 6, 1834, was exhibited a piece of wood greatly perforated by *Termites* in the East Indies; and Capt. Smee observed that, from observations he had made in India, it appeared to him that *Termites* were much more destructive, in consequence of a powerful acid which they leave upon every thing they pass over, than from their merely feeding upon such substances.

EFFECTS OF CERTAIN ELECTRIC STATES OF THE WEATHER UPON ANIMALS, p. 344.—“Frogs, Cats, and other animals,” says M. D’Isjoulval, “are affected by natural electricity, and feel the change of weather; but no other animal more than myself and my spiders.” During wet and windy weather he accordingly found that they spun very short lines, “but when a Spider spins a long thread, there is a certainty of fine weather for at least ten or twelve days afterwards.” See an article on the effects of electricity, &c., upon animals, published in the *Field Naturalist’s Magazine*, ii., 91.

INSECTS SPINNING EGG-BAGS, p. 354.—It is well known that most Spiders spin a sort of bag to inclose their eggs, but the only

to such a purpose, for the best of all reasons, because it does not possess any; so that it is likely that Mr. Woodward, when he hazarded this conjecture, had not seen the insect in its larva state.”—*Mag. Nat. Hist.*, viii., p. 628.

insects (Spiders are not of this class) known to spin one for theirs are the *Hydrophili*, a species of Water Beetles.—See *Introduction to Entomology*, iii., 72.

CLEANLINESS OF SPIDERS AND INSECTS.—"On coming down the Maine," says Mr. Rennie, "by the steam-boat from Frankfort, in Aug., 1829, we observed the geometric net of a conic Spider (*Epeira conica*) on the frame-work of the deck, and as it was covered with flakes of soot from the smoke of the engine, we were surprised to see a Spider at work on it; for, in order to be useful, this sort of net must be clean. Upon observing it a little closely, however, we perceived that she was not constructing a net, but dressing up an old one; though not, we must think, to save trouble, so much as an expenditure of material. Some of the lines she dexterously stripped of the flakes of soot adhering to them; but in the greater number, finding that she could not get them sufficiently clean, she broke them quite off, *bundled them up, and tossed them over*. We counted five of these *packets of rubbish* which she thus threw away, though there must have been many more, as it was some time before we discovered the manœuvre, the packets being so small as not to be readily perceived, except when placed between the eye and the light. When she had cleared off all the sooted lines, she began to replace them in the usual way."

In the *Entomological Magazine*, iii., p. 337, a writer states that he has often observed Flies, when covered with pollen, busy themselves in scraping it off, and then *roll it up into a pellet* with the fore-legs, and throw it away with a sort of jerk.

GALLS PRODUCED BY INSECTS, p. 370.—At the Breslau meeting of the German Naturalists, Sept. 1833, Dr. Hammerschmidt made some observations on the galls produced on plants by insects, with an attempt at their classification, illustrated by figures of not less than 250 different specimens of galls and the insects producing them. Mr. Westwood exhibited at the Entomological Society's meeting, March 7, 1836, specimens of Poppy-heads, destroyed by the attacks of a small *Cynipideous* insect.

J. H. F.

Southmark, Oct. 20, 1836.

(To be continued.)

[Our Correspondent's notes on Rennie's popular compilations, are interesting and useful; though they contain some facts and opinions to which we cannot ourselves subscribe.—Ens.]

CORRESPONDENCE.

TO THE EDITORS OF "THE ANALYST."

GENTLEMEN,

A few observations on a science, too little understood and too much neglected, may not be unacceptable to you, as the Editors of a Journal devoted to *science* and literature—I allude to the study of Meteorology, which has strong claims to the favourable consideration of the public, although it does not afford many opportunities to the student to display his knowledge, or to make discoveries. As the observations are made in private, and much time is occupied in establishing any theory that may be formed from given data, it is not surprising so few devote themselves to the science; yet all the phenomena which form the studies of the Meteorologist, are intimately connected with the health, happiness, and welfare of man. The changes in the state of the atmosphere, the humidity of one place, and the dryness of another—the genial warmth of the south, and the bracing air of the north—are of the utmost consequence to the invalid, and many of the ills which “flesh is heir to,” may be alleviated by attention to the place in which the patient may reside, a knowledge of the fitness or impropriety of which Meteorology can alone supply. The clearing of woods, and the planting of trees, alter the temperature of a country, and cause disease or impart health, almost at the will of man: these, though the work of other hands, produce effects which would have remained unknown but for the labours of the Meteorologist. The range of the thermometer prescribes the productions to be obtained from the earth, in this or that locality; even in England, the months in which the greatest or least quantity of rain falls, vary in different places, and those not far distant from each other: thus, at Wycombe and Epping, for instance, the excess of rain falls in September, at Edmonton in October, and at Cheltenham in July, while November produces the greatest quantity at Carlisle. From an acquaintance with facts of this description, the husbandman would be enabled to arrange his plans, and to the Meteorologist he would be indebted for this knowledge. The current and sound of winds, and the aspect of the clouds, afford to the student of Meteorology the means of foretelling changes in the weather, whose effect might involve the safety and comfort of many: and it is from an attention

to these appearances, that "they that go down to the sea in ships," can make preparations to meet the dangers of the storm they cannot avert. How interesting, therefore, must be that study which may be made so beneficial to mankind. Having stated some of the advantages resulting from a knowledge of Meteorology, I will proceed to lay before your readers the attempts that have been made, and are now making, to cultivate its study, and to stimulate persons, with leisure and opportunity, to pursue it. It must have been matter for surprise that, while there is scarcely a science or art but receives encouragement and support from a society composed of persons professing the one or attracted to the other, Meteorology does not enjoy that patronage. True it is that, in 1823, a society was established in the metropolis, under the denomination of "the London Meteorological Society," admitting persons residing in the country as corresponding members. Of that society Dr. Birbeck was the president; Dr. Clutterbuck the treasurer; and Mr. Wilford the secretary; with a council consisting of eight members: but it never came into active operation, and soon fell into decay. As this society never was, however, formally dissolved, it may be justly observed "it is not dead, but sleepeth." To awaken this association from its lethargy, is the endeavour of several persons, who have for years devoted themselves to the subject for which it was formed; and I am led to believe that the staff, if I may be allowed the expression, of the old society are anxious to enlist recruits into the service, and several of the old members are about to take their former places in the ranks.

Since 1823 the science of Meteorology has not only progressed, but has been more generally encouraged: the time has therefore arrived, when the efforts of a society desirous to promote the study, can be best directed in effecting so desirable an object. There cannot, surely, be a town in the kingdom but would produce more than one active member, and few villages but would find its representative. Men of the medical profession and scholastic teachers are particularly qualified, by their habits and avocations, to become exceedingly serviceable; and by using their influence, and by making exertions, a long time need not elapse ere Meteorology would be able to boast of having a society as extended and active as any of those which are advancing science in every direction, and conferring so much honour upon the country.

Yours, truly,

JAMES G. TATEM.

Wycombe, Oct. 9, 1836.

PROCEEDINGS OF PROVINCIAL SOCIETIES.

COVENTRY MECHANICS' INSTITUTION.

THE eighth anniversary meeting of the friends and members of the Coventry Mechanics' Institution, was held on Tuesday, Oct. 4, at St. Mary's Hall. The Mayor having taken the chair, the business of the evening commenced by Mr. Charles Bray reading the Report, which contained the gratifying announcement of a considerable increase in the funds of the Institution, and an accession of upwards of 160 volumes to the library, the donations of liberal individuals, exclusive of works purchased by the committee. The premises now occupied by the Institution being inadequate for the accommodation of the members, a building has been purchased admirably adapted for the purpose; consisting of a reading room, museum, library, class rooms, laboratory, and a lecture room capable of containing 600 persons. So great has been the zeal displayed to effect this object, that the sum required (£1300.) has been chiefly raised amongst the members.

The resolution "that the Report be read and circulated" having been proposed and seconded, James Simpson, Esq., Advocate, of Edinburgh, after reading the second resolution, "That this meeting highly approve of the principles upon which this institution is founded, by which no party in religion or politics, is excluded from the advantages it holds out," observed—"If there be a favoured spot where the storm, yet raging without in an uneducated age, may be hushed to a calm, it is that where the students of nature congregate—where meet the worshippers of 'divine philosophy, effusive source of evidence and truth,' to drink of the pure fountain at its source. Such is your noble Institution. Come you from the very tug of party strife—here you are, calm and kindly. The works and ways of a benevolent God are your contemplation. Can these be approached with violence on the lips, or rancour in the heart? Can the eye be cast on the soft green that mantles nature, fatigued with wastes of burning sands or boundless snow, without feeling in the heart its sweetest inmate, brotherly love?—without opening the bosom to the dove of peace? It were morally, religiously impossible to renew the unholy war after the truce: good feeling, even good taste, forbids the very thought. Thus will your Institution tend to abate the party spirit you deprecate. Advance, look not to the right or to the left, in your philosophical course. Listen to the ravings of party discord as to the storm without when all is safe, and calm, and warm within. You are labouring in a glorious spring-tide. This is your reward, although it may not be given to the youngest among you to see the harvest. Despond not—despair not. Yours is a high privilege, even to aid in sowing the

seed. Complain not that the sun which shall cheer the future reapers must shine upon your graves."—Mr. Charles Bray, in seconding the resolution, stated that "the principles upon which the Institution was founded were well known to the public; it was known to be neutral ground, upon which all parties in religion and politics might meet for the study of science and in the search of truth; where all sectarian feeling might be laid aside, and where that charity and benevolence might be cultivated which was the very essence of Christianity." After alluding to another institution, of a somewhat similar character, recently established in Coventry, which he considered more in the light of an auxiliary than an opponent, as its object was to advance the cultivation of useful knowledge, Mr. Bray very justly and eloquently remarked that "the knowledge a man might acquire at a Mechanics' Institution, (however much despised by those who did not advocate them) was sufficient to give a different face to the whole of nature, disclosing endless beauties of which the man who was deprived of it had no conception. What a different appearance did the spangled heavens, the starry night, present to him who was but acquainted with the very first truths in astronomy, knowing each bright point to be a sun, and justly conceiving, therefore, that it was the centre of a system as vast and splendid as the one we inhabit, and equally the mansion of life and intelligence: how different, he said, was this appearance to that which was presented to him who looked upon it but as shedding a feeble glimmering over this little world, or even, with the simplicity of the child, conceiving the stars to be 'little gimblet holes to let the glory through.' If we would teach religion, it was here that its foundation might best be laid—it was here that the reverence and love due to the *Father of all* might be taught; for it was here, as Dr. Chalmers beautifully expressed it, 'that the Divinity reigned in all the grandeur of His high attributes—where He peopled immensity with His wonders, and travelled, in the greatness of His strength, through the dominion of one vast and unlimited monarchy.' The same effect that even so little knowledge had upon the face of the heavens it had upon the whole of nature; every object became a source of pleasure and delight when we were acquainted with its properties and relations; and this knowledge was now so systematized and arranged that it was of easy acquirement. How beautiful the truths that lie upon the very surface of the fields of philosophy! We know that the power (called attraction) that draws the stone and feather to the earth is the same that wields the planets in their spheres; that, justly awful as the lightning may appear, yet Franklin dared to send his kite into the clouds, and bring it down to subject it to his analysis; that the ocean, slumbering and peaceful as a little infant, yet contains a power that, employed as Watt employed it, would be sufficient to rend in twain the universe. All departments of science revealed equal wonders and supplied equal pleasures—and pleasures, O! how much more pure and delightful than those proceeding from

mere animal gratification. Truly was knowledge 'a magic wand, unveiling the face of the universe, disclosing endless charms, of which the ignorant never dream:' the mind of every mechanic was equal to the acquirement of this knowledge; and not the least important for him to know was that we had lately acquired of our own constitution;* shewing the sources of our pleasures, and how admirably we were adapted to the circumstances in which we were placed, and to everything around us; shewing that the laws of the intellectual and moral world were as fixed and certain as those of the physical, and that they all tended to the gradual advancement of our race in the scale of improvement and happiness: but most important of all was the knowledge, derived from the same source, that God had so ordered things that we could only be happy ourselves in proportion as we promoted the happiness of others; that, as the first law of nature prompted us to take care of ourselves, this was *best* done by our adding all in our power to the enjoyment of every being possessing life and sensation. In conclusion, he would say, that he could not but regret that men could be found in the present enlightened age, who supposed such truths—the truths of natural science—which it was the object of Mechanics' Institutions to supply, could be in any way inimical to the cause of true religion, as if 'God's ever visible and magnificent revelation, as displayed in his works and in the structure of the universe, could be at variance with any other revelation:' that men could make a distinction between religious and useful knowledge, as if the knowledge of nature, the beauty of creation, the wisdom and benevolent design displayed in all its parts, were not the best foundation on which the enlightened minister, or those to whom the interests of religion were intrusted, could possibly build. No! we must all feel what Dr. Arnott so beautifully expresses, that 'it is not the abject terror of a slave which is inspired by contemplating the majesty and power of our God, as displayed in His works, but a sentiment a-kin to the tender regard which leads a favourite child to approach with confidence a wise and indulgent parent.'"

The subsequent resolutions were proposed and seconded by Mr. Hands, Mr. Bannister, Mr. J. S. Whittam, Mr. White, Mr. Wrenford, Mr. Hennell, the Rev. J. Sibree, Mr. Whitehead, Mr. Nankivell, Mr. Szyleyko, and Mr. H. Merridew, in very apposite terms; but we regret our space will not permit our giving even an outline of their several addresses.

The resolutions were carried unanimously, and the assembly, which was a highly respectable and numerous one, manifested a warm interest in the proceedings of the meeting.

* [Alluding to a highly interesting and instructive course of Lectures "On the Physical Peculiarities of Man," delivered by W. Watts, Esq., of Birmingham.—Eds.]

DONCASTER LYCEUM.

This Literary and Scientific Institution rose into existence in December, 1834. A desire of union for intellectual purposes had partially manifested itself, at intervals, in the town; and a small degree of exertion was alone wanting to carry it into effect. A few individuals consequently met, and a public meeting subsequently took place, at which the mayor presided; when an introductory address was delivered by E. Scholfield, Esq., M.D., and the society established. A provisional committee having been nominated and a room engaged, on the sixth of January, 1835, the first general meeting of the society was held.

It was found that several of the most respectable residents, including the vicar and nearly all the professional gentlemen, were on the list of members: its stability was thus considered secure at the outset. Rules and regulations, previously drawn up, were submitted and adopted; and presiding officers and a committee appointed for the then current year.

The plan of this institution is comprehensive, and its views extend to general utility. It has two subscription lists; the one of annual members, at £1,—the other of quarterly, at 10s., in four payments; the latter for young persons and others, whose circumstances demand consideration; but, when admitted members, the privileges are equal. The admission is by written proposal and vote by ballot.

The society is governed by a president, vice-presidents, and committee, elected annually. The presidents hitherto have been, the Rev. John Sharpe, D.D., and Henry Bower, Esq., F.S.A.; the vice-presidents, E. B. Denison and John Branson, Esqrs., and Dr. Scholfield. Its committee of twelve members are chosen six from each class of subscribers; the treasurer and secretary apart; and all by ballot. Ladies, on payment of 7s. annually, are likewise entitled to attend the reading of lectures and papers.

The proceedings have differed little from the ordinary course. Periodicals have been provided, and a library, commencing with donations, has been increased by purchase; but it is not at present extensive. Lectures, on various subjects of science and literature, have been delivered by members of the society; and professed lecturers occasionally engaged. Papers have also been read and discussed; and thus opportunities afforded of elucidating, by a comparison of opinions, subjects within the scope of its plan, from which politics and controversial divinity are strictly excluded. A common feeling has been evinced of the advantage of a central place of communication, where men engaged in various pursuits or avocations, may unite for purposes of universal interest, the cultivation of knowledge, and the spread of refinement, although they may differ on passing events and ordinary circumstances.

A museum forms part of the plan of the institution; but until of late, owing to the limited extent and insecure tenure of the pre-

mises occupied by the society, little has been done towards its formation. Within the last three months it has, however, made considerable progress. Many valuable donations have been made, including numerous beautiful specimens illustrative of Natural History and Geology.

A building-fund committee has recently been formed, and hopes are entertained that, with the aid of its friends and supporters in Doncaster, seconded by the liberality of the opulent and influential residents of its neighbourhood, another year will see the foundation laid of a building suitable to its purposes; and this Lyceum become not only a centre of union for the most commendable and delightful of all pursuits, but also a repository of many beautiful and valuable specimens of the productions of nature and art.

The officers and committee for 1835 were:—Rev. John Sharpe, D.D., president; Henry Bower, Esq., F.S.A., and E. Scholfield, Esq., M.D., vice-presidents. Committee—annual members: Messrs. E. Sheardown, T. B. Mason, J. E. Morey, R. Storrs, C. White, J. Dunhill; quarterly members: Messrs. T. Oxley, J. Hawley, G. Siddall, W. R. Scott, W. Illingworth, S. Appleby. Treasurer, Mr. C. Baker. Secretary, Mr. W. Wimberley. Officers and committee for 1836:—Henry Bower, Esq., president; Rev. Dr. Sharpe, E. B. Denison and John Branson, Esqrs., and Dr. Scholfield, vice-presidents. Committee—annual members: Messrs. W. Beckitt, T. B. Mason, R. Storrs, J. E. Morey, E. Sheardown, J. L. Levison; quarterly members: Messrs. W. R. Scott, W. Illingworth, J. Hawley, G. Siddall, H. Beckitt, J. Stott. Treasurer, Mr. C. Baker. Honorary secretary, Mr. W. C. Wimberley.

The lectures which have been given are:—

On the best means of imparting practical science, by Mr. Levison—On hereditary disease, by Dr. Scholfield—On the lyrical poetry of England and Spain, by Mr. Wimberley—On the architecture of Greece and Rome, by Mr. Hadfield—On astronomy, by J. Abbott, Esq., B.A.—On the circulation of the blood, by Mr. Morey—On the structure and functions of the eye, by Mr. Storrs—On entomology, by Mr. Baker—On philology, by the Rev. J. Callaway—On general education, by the Rev. Dr. Sharpe—On the oracles of antiquity, by the Rev. P. Inchbald, D.C.L.—On phrenology, by Mr. Levison—An examination of phrenology, by the Rev. J. Bromley—On geology, by Mr. J. N. Mosby—On statistical science and its results, by Mr. Baker—On the philosophy of logic, by Mr. Callaway—On the spirit and influence of poetry, by Mr. Wimberley—On the nature and artifices of unjust and malignant criticism, by Mr. Abbott—On Hebrew poetry, by Mr. Mosby—On the rise and progress of the Italian language, and the poetry of Dante, by Mr. J. B. Testa.

Papers on various subjects have been read by Messrs. Morey, Storrs, Levison, Mosby, Scott, Hawley, Stott, Siddall, H. Beckitt, Hepworth, H. Brooke, &c.

In the early part of Oct. 1836, a discussion on Phrenology took place at the Doncaster Lyceum, Mr. J. L. Levison appearing as its advocate, and the Rev. J. Bromley, dissenting minister, Mr. Morey, Mr. Storrs, Surgeons, of Doncaster, and others, as opponents. The

usual oft-refuted objections of atheism, fatalism, &c., were brought forward by the anti-phrenologists on this occasion, but the charges were satisfactorily replied to by Mr. Levison, author of *Mental Culture*, and who has done much for the diffusion of Phrenology, by his lectures on the subject, in various parts of England. Intense interest was excited by this discussion, in the enlightened inhabitants of Doncaster and its neighbourhood. We should much like to see a Phrenological Society established at Doncaster, apart from the interests of the Lyceum, and are convinced that it would be well supported. The general feeling of the town is certainly favourable to the science, and the spark only wants fanning to kindle into a goodly flame.

MACCLESFIELD SOCIETY FOR THE DIFFUSION OF USEFUL KNOWLEDGE.

At the first anniversary meeting of this Institution, John Brocklehurst, Esq., M.P., the President of the Society, on taking the chair, congratulated the members on the rapid progress the Institution had made since its formation, and concluded an animated address by requesting the Secretary to read the Report. The Committee commenced the Report by stating that, notwithstanding much unmerited obloquy and misrepresentation on the one hand, and indifference on the other, the Society had continued steadily to increase its members. The Committee further express a hope that the number of those persons who desire to monopolize knowledge for a particular class of the community, and to prevent the working classes from sharing with them the delights of intellectual improvement, are fast decreasing; and that their senseless clamours about the evil tendency of learning, when pursued by the working man, will no longer be listened to as a truth, but be received as a gross libel, and fit only to be entertained by those whose sympathies are all expended within the limits of their own particular order and rank in society.

The reading of the Report, which embraced a variety of topics, being concluded, the Rev. Edward Stanley addressed the meeting in a very energetic strain. In the course of his observations, the reverend gentleman said he was convinced by every day's experience of the importance of such establishments throughout the country, but more especially in the great commercial towns, where every encouragement should be given by all who called themselves patriots or Christians, in the wide and comprehensive sense of the term, to institutions whereby the minds of an important part of the community might be directed to pursuits which, while they enlarged and elevated them, combined, at the same time, rational amusement with utility. If he had ever entertained the shadow of a doubt respecting the benefits likely to accrue from such societies, they would have been

utterly effaced by the interesting meetings he had witnessed during a late visit to the scientific institutions in Cornwall. There he found similar establishments in full operation, under the best auspices, and with the best possible effects ; and he felt assured that, in proportion as they were adopted and supported in the dense population of this part of England, would they infuse that higher tone of morality and intelligence which forms so striking a feature in the corresponding classes of the community in the southern districts to which he alluded. He then proceeded to repudiate the charge brought against these societies of their having a political and irreligious tendency. He was grieved to say, these gratuitous falsehoods were but too commonly brought against institutions which had for their object the rational pursuits of more extended knowledge, whereby the humblest individual might be raised in the social scale of being—for nothing, he was persuaded, could be more detrimental, he might almost add, more ultimately fatal to religion, than any hint, more particularly if thrown out by those of his own profession, that there could be no safe union between religion and the progress of mental cultivation and rational knowledge. This he well knew was the doctrine of darker ages, when an over influential, and dangerously dominant and intolerant priesthood were aware, that it was only by keeping their flocks in intellectual darkness that their influence could remain unshaken ; but amongst us of a more enlightened age of religious freedom, whose very claims and privileges depended so much on the acknowledged right of liberty of judgment, and a more liberal spirit of inquiry, such a sentiment ought not for a moment to be listened to. He concluded by wishing success to the institution, and expressing his earnest hope, that it, and every other similar institution, might be strenuously supported by all who wished to see their country prosper, and more especially by christian ministers of all denominations, whether of his own or other churches or persuasions, who might by so doing incalculably advance the social and religious civilisation and reformation of society at large.

The several resolutions having been duly proposed and seconded, the following officers for the ensuing year were then appointed :—President—J. Brocklehurst, Esq., M.P. ; Vice-Presidents—Rev. E. Stanley, Thomas Swanwick, Esq., M.D., and William Hopes, Esq. ; Committee—R. Bagshaw, Esq., Messrs. Hulley, J. Sargent, John Shatwell, R. Wilson, J. Thorley, jun., D. B. Curwen, Benjamin Broome, G. Barton, J. Barber, C. Condron, J. Kelly, S. Hill, G. Simpson, Thos. Smith, and W. Wardle.

SHROPSHIRE AND NORTH WALES NATURAL HISTORY
AND ANTIQUARIAN SOCIETY.

A Scientific Meeting of this Society was held at the Museum, on the 1st November, Dr. Du Gard, V. P., in the chair, when the following papers were read:—

“On the Natural History of Coal, with Remarks on the Collieries of Shropshire,” by Mr. Thomas Blunt. The author traced the history of this mineral substance from a very early period down to the reign of Elizabeth; during which the coal trade flourished greatly, and was regarded as a profitable source both of local and government revenue. From that time to the present day, this branch of our national commerce has been steadily progressing, and coal now forms an important article of expenditure in the support of our mercantile wealth, as well as of domestic comfort and convenience. Between 7 and 8 millions of tons are annually consumed by our manufacturing and steam navigation, 3,550,000 tons in the iron works, and in the manufacture of gas in London alone about 500,000 tons; add to which the immense consumption in the glass and pottery works, the amount consumed for domestic purposes throughout the kingdom, and the quantity exported, we shall find a total annual demand for this fuel of upwards of 32,469,570 tons. The resources from whence this immense demand is supplied, appear almost exhaustless, and are comprised in the twelve principle coal-fields of this island, the most important of which are, the Northumberland and Durham, Yorkshire and Lancashire, Stafford and Shropshire, and the extensive one, as yet but little worked, of South Wales. These fields are geographically situated in the middle districts of the kingdom, and geologically in the lower secondary strata, generally resting on beds of transition limestone, and occasionally covered by marl and red sandstone. The principal basin of the South Staffordshire field occupies an area of about 70 or 80 square miles, lying between Stourbridge, Birmingham, Wolverhampton, and Walsall. Adjoining this is the Shropshire field, including Coalbrookdale, Ketley, Hadley, and the whole plain of Shrewsbury, comprising from 80 to 90 miles. The seams in these measures are of considerable extent, and in the main coal of Staffordshire some occur 30 feet in thickness, being the richest in the kingdom. The coal mines of Shropshire are severally the property of the Marquis of Stafford, the Earl of Bradford, and the Messrs. Botfield, and are principally let on lease to the different companies who work them. Those of the most importance lie on the eastern border of the county, in the parishes of Lilleshall, Wellington, Dawley, Ironbridge, and Madeley. The upper “Basset,” or inferior strata, are generally found at a depth below the surface, varying from 50 to 100 yards, and although not so rich in quality as the coal of the Staffordshire deposits, are yet very superior to the produce of the mines in the centre of the county, of which Welbatch and Westbury are the principal. These latter contain a much less proportion of bitumen, and

a larger quantity of earthy matter. Of the collieries in the west and north-west of Shropshire, the most considerable are those of Llwyn-y-maen, near Oswestry. There are also some mines of limited extent on the borders of Herefordshire; and the Clee hills, near Ludlow, contain on their sides two or three small detached basins. The vegetable origin of coal is now clearly ascertained. The Dudley strata are entirely composed of distinct layers of plants converted into common bituminous coal. In the coal-fields of the north of England, cryptogamic vegetables and coniferæ abound in immense numbers.

The fossil plants at present ascertained in the coal strata are estimated at about 500 species.

The formation of this substance is still involved in uncertainty. It is conceived as probable that the coal-fields indicate the chief localities of the exuberant primeval vegetation, which being overwhelmed by a deluge, and buried in the valleys or friths and estuaries under an immense torrent of mingled earth and water, charged with carbonaceous and mineral matters, would be subject to that pressure, moisture, reclusion of air, and confined moderate warmth requisite to produce their conversion into coal. To account for the exuberance of primeval vegetation, we must remember that these northern latitudes had the high temperature and moisture now found only in tropical regions.

Coal, though enumerated under nearly 70 denominations, may properly be classed into three species. 1st.—The brown or wood coal, which is of comparatively recent geological date, and is partially distributed, and in which the change from wood to coal is clearly distinguishable in the still existing vegetable fibres. 2ndly.—The black, or common pit coal, comprising the rich caking pit coal of Newcastle and other districts, including Shropshire and Staffordshire. Carbon, varying from 50 to 60 or 70 per cent., constitutes the chief ingredient. 3dly.—The glance coal, found on the Continent, the United States of America, and in small quantities in Shropshire and Staffordshire. Of this, many articles of taste and ornament are fabricated.

Common pit coal, submitted to destructive distillation in an iron retort, obviously yields carburetted hydrogen, an aqueous ammoniacal liquor, and a thick fluid resembling tar; chemical analysis, however, resolves this substance into a greater number of elementary bodies, all of which are gases with the exception of the carbon. The products above enumerated yield also several valuable articles of commerce, and in consequence of immense quantities of pit coal being distilled for the production of gas, the demand for the muriate and carbonate of ammonia is principally supplied from this source. Pure petroleum and limpid naptha are also obtained from the same materials, and even the soot yields valuable ingredients, to which it owes its efficacy as a manure. Thus, as Dr. Buckland justly remarks, "from the wreck of forests that waved upon the surface of the primeval lands, and the ferruginous mud that was

lodged at the bottom of the primeval waters, we derive our chief supplies of coal and iron, sources which contribute more than any other mineral production of the earth to increase the riches, multiply the comforts, and ameliorate the condition of mankind."

Dr. Henry Johnson read a short but interesting paper on the animal matter which he had obtained from portions of fossil bones in the museum of the society, extracted from the Bleadon Cavern, Somersetshire, and the diluvial gravel at Lawford, Warwickshire.

A paper by Mr. W. A. Leighton, "On the Evidence of Design observable in the Vital Economy of the *Colchicum autumnale* (Linn.), or common Meadow Saffron." After detailing the peculiar structure of this plant, the writer deduced that there was abundant evidence of design manifested in the mode of its flowering, in the provisions made for its reproduction in case of the germs remaining unfertilized, and also in the relative positions of the embryonic bulb and the parent bulb.

The following papers were subsequently read: "An Analysis of the Water of Sutton Spa, near Shrewsbury;" "An Historical Account of the Parish and Church of St. Michael, within the Castle of Shrewsbury," by Mr. Henry Pidgeon; and "Some Account of a Tumulus between Rhoscolyn and Holyhead," by Mr. T. C. Eyton. This singular remain is chiefly composed of about fifty stone coffins, placed in layers one above the other, each composed of one or more flat slates placed horizontally for the bottom, on which the body rests, with others for the sides and top. The interstices between the body and the sides of the coffin were filled up with shells of species now found on the shore, and the intervals between the coffins with sand. An examination of the bones determines them to be those of adult males. The tumulus is partially destroyed by the sea, which has made evident encroachments on this part of the coast. There is a tradition, that the summit was crowned with a pile of stones, nearly all trace of which is now obliterated.

Mr. Henry Pidgeon exhibited and presented to the society a leaden seal, once appended to a bull of Pope Gregory X. (who died 1276), found in an excavation made near an old house in Coleham, Shrewsbury, during the present year. On the obverse is *GRÉGORIVS PP X*; and on the reverse, two full faces under a rude canopy, bearing in front a crosier, and inscribed above with the letters *SPA S PE*: meaning *Sanctus Paulus, Sanctus Petrus*.

The General Annual Meeting was held on Thursday, Nov. 17. Dr. Du Gard, one of the Vice-Presidents, having taken the chair, delivered a brief and apposite address. After expressing the regret which he was sure would be felt by all present, at the absence of the President of the Society (the Bishop of Lichfield and Coventry) on account of indisposition, and briefly adverting to the objects and exertions of the Society, especially the desirableness of founding at this time, a proper building for a permanent Museum, he concluded by proposing, on behalf of the council, that Lord Viscount Clive (on whose public character and amiable disposition he pronounced

a merited eulogium) should be elected President of the Society for the ensuing year, which was seconded by R. A. Slaney, Esq., and carried by acclamation.

The report, after congratulating the members on the general progress of the society, and on the increase of its numbers, proceeded to state the income and expenditure of the first year of the society's establishment, and next adverted to the numerous and valuable donations to the museum. Major Wakefield had presented an extensive and fine collection of birds from Australia: about one hundred other foreign birds had been obtained by purchase or exchange, and many British birds had been sent to the museum by gentlemen in the county, which would form the nucleus of an interesting collection.—After mentioning the donations to the cabinet of entomology, by the Rev. F. W. Hope, Mr. Watkins, and Mr. T. C. Eyton, and the additions to the other branches of zoology, the report proceeded to notice the progress made in the botanical department by the donations of Mr. J. E. Bowman, F.L.S., of Mr. W. A. Leighton, Mr. Babington, and others; and the instructive arrangement of the plants indigenous to Shropshire by Dr. Wilson. Mr. Bowman had also added to the society's collection of fossil plants, and an interesting specimen, containing the remains of a new species of fossil fish, had been presented by the Rev. T. T. Lewis, from the silurian rocks in the vicinity of Ludlow. Among the donations to the library, that of the Rev. Canon Newling was particularly noticed, comprising the original copper-plates of a very rare work, Lister's edition of Goedartius on Insects, 1685. Several works were noticed with peculiar pleasure as the productions of members of the society, particularly that of Mr. T. C. Eyton on the rarer British birds; and a hope was expressed that the important geological discoveries and facts in natural history disclosed in the interesting extracts of Mr. C. Darwin's letters from South America, would hereafter be given to the world more fully by their learned and diligent author.

The erection of a suitable building for a museum, and the formation of a botanic garden, was earnestly recommended to the attention of the meeting, and a committee was appointed, consisting (among others) of the Viscount Clive, Earl Darlington, Hon. R. H. Clive, Sir Baldwin Leighton, Hon. T. Kenyon, Rev. Dr. Kennedy, Mr. Slaney, and other gentlemen, with power to add to their number. The various resolutions were proposed and seconded by the Earl of Darlington, the Rev. B. H. Kennedy, the Hon. R. H. Clive, R. A. Slaney, Esq., the Hon. T. Kenyon, Sir Baldwin Leighton, Bart., Dr. Goldie, and the Viscount Clive. The following were appointed the Officers and Council of the Society for the ensuing year: President—The Viscount Clive; Vice-Presidents—Thos. Du Gard, M. D., R. A. Slaney, Esq., T. C. Eyton, Esq., Rev. Dr. Kennedy; Treasurer—Thos. Eyton, Esq.; Secretaries—Dr. H. Johnson and Mr. W. A. Leighton; Council—Mr. John Carline, T. F. Dukes, Esq., George Goldie, M. D., Mr. H. Pidgeon, T. Sutton, Esq., Mr. J. Whitney, Henry Bloxam, Esq., Mr. T. Blunt,

T. W. Wilson, M.D., J. E. Bowman, Esq., W. W. How, Esq., Rev. F. Thompson.

The Earl of Mountnorris, the Rev. Canon Newling, of Lichfield, and Dr. Charles Hastings, F.G.S., &c., of Worcester, were unanimously elected honorary members of the Society.

The business of the meeting having been brought to a close, J. B. Williams, Esq., moved, and T. N. Parker, Esq., seconded, a vote of thanks to Viscount Clive, for his admirable conduct in the chair, which was carried unanimously.

STAINES LITERARY AND SCIENTIFIC INSTITUTION.

IN November, 1834, a few literary and scientific residents of Staines and its vicinity, fully sensible of the advantages to be derived by the formation of institutions for the promotion of science and literature, decided upon the establishment of a Society, which was opened January 1, 1835, by an able and eloquent address delivered by the Rev. Dr. Jones,* explanatory of the objects of the society, which was printed at the unanimous request of a crowded audience. It is gratifying to observe that the encouragement received by this body was mainly owing to the kindness of individuals in coming forward to deliver gratuitous lectures. Amongst the earlier lectures the following may be mentioned:—Opening address by the Rev. Dr. Jones; on the Antiquities of Egypt, by Mr. Stackhouse; on the Supporters of Combustion, by Mr. F. Curtis; on Optics, by Mr. W. B. Byng; on the Antiquities of Britain, by Mr. Stackhouse; on Poetry, by the Rev. J. Hearn; on Geology, by W. M. Higgins, F.G.S.; on Pneumatics, by Mr. Bennett; and a concluding address, by the Rev. Dr. Jones. Stimulated by the brilliant success of the first season, which closed April 28, 1835, and animated by the cheering prospects for the future, it was resolved to erect a building for the use of the Institution, with a lecture room, library, and museum, at an estimated expense of £1000, in shares of £25 each. The committee found, with pleasure, the support they expected realized; all the shares were soon taken, plans for the building were procured, and the present beautiful edifice was erected.

The season was opened in the new building, on January 1, 1836, by a masterly introduction of the president, John Gibbons, Esq., and an address by the Rev. Dr. Jones, which was followed by many excellent speeches, from Col. Wood, M.P., G. S. Harcourt, Esq., and Henry Pownall, Esq. Rules for the guidance of the Institution were subsequently framed, and are distributed gratis, upon application. The lectures delivered during the second season, ending

* This address, with two others, likewise delivered by Dr. Jones before the same Society, have been printed in a separate form, and amply repay perusal.—Eds.

May 3, 1836, were—Opening address, by Dr. Jones ; on the Advantages of Education, by the Rev. E. Craig ; on Poetry, by the Rev. J. Hearn ; Study and Advantages of Natural Philosophy, by W. Higgins ; on Heat, by Mr. W. F. Curtis ; on Electrical Phenomena, by W. M. Higgins ; on Light, by Mr. W. B. Byng ; on Painting, by the Rev. W. Russell ; on Pneumatics, by R. Smith, Esq. ; on Palestine, by the Rev. R. Porter ; on the Eye (repeated by request), by J. N. Heale, Esq. ; on the Philosophy of History, by G. Bennett, Esq. ; on Light, by Mr. W. B. Byng ; on the formation of a habit of Scientific Inquiry, by the Rev. E. Craig ; concluding Address of the season, by Dr. Jones. To meet the convenience of the neighbouring gentry, several of these lectures were delivered in the morning, all of them to respectable, and many to crowded, audiences.

The officers of the society are as follows—Trustees, Rt. Hon. Sir W. H. Fremantle, Col. T. Wood, M.P., G. S. Harcourt, Esq., Rev. R. Govett, A.M., vicar of Staines, Henry Ashby, Esq. President, John Gibbons, Esq. Vice-presidents, Rev. R. Govett, A.M., Rev. R. Jones, D.D., M.R.S.L., H. Pownall, Esq. Treasurer, W. B. Byng, F.R.A.S. Committee, Mr. T. Ashby, jun., Mr. C. Finch, S. F. Davis, Esq., Mr. F. Ashby, Mr. J. Jackson, Mr. W. Holgate, jun., J. Dobinson, Esq., G. Bennett, F.L.S., Rev. E. Craig, M.A., F.R.S.E., Rev. R. Porter, Mr. H. Ashby, Mr. J. N. Heale. Honorary Secretaries, Mr. Curtis, Mr. Richings.

The funds of this society are in a flourishing state, and its prospects otherwise cheering and encouraging. We sincerely hope it will continue to be supported with the same praiseworthy zeal which prompted its establishment, and trust that the library and museum will rapidly increase by the liberality of the inhabitants of Staines and its neighbourhood.

WARWICKSHIRE NATURAL HISTORY AND ARCHÆOLOGICAL SOCIETY.

The first Quarterly Meeting of the members of this flourishing association was held at Warwick, on the 22nd of October, Sir H. Dryden, Bart., in the chair. The Chairman congratulated the members upon the success which had already attended the formation of the society, and the prospects they had before them of soon obtaining not only a most numerous list of subscribers, but also a most beautiful and valuable collection of natural curiosities ; and it afforded him the greater satisfaction, since the pursuit of the sciences was a purely tranquil and contemplative one, and as such must meet with the increased consideration and support of the county. After passing a warm eulogium on Dr. Buckland, and expressing the high respect and admiration he felt for the talents and attainments which had enabled that eminent individual who sat near them to

chalk out a new path of fame for himself, on his way to that high and honourable eminence, which in the estimation of his own countrymen and scientific foreigners, he justly occupied, he called upon the Professor to deliver his address.

Dr. Buckland then rose, and congratulated the county upon the formation of the society, the talents of whose members would be exercised upon untrodden ground, and whose exertions would be deeply and abundantly rewarded. Dr. Buckland remarked that the walls of Warwick Castle, the walls of the town, and the walls of the cathedral, were composed of strata till recently unknown to geologists. He saw them twenty years ago, but then he did not know what was their composition; but still in his travels he had borne in mind the remains of the animals contained in that strata, in the hope that the time might come when the darkness in which those fragments were eclipsed, would be dissipated; and when he should be able to make some important discovery to the scientific world. It was a matter of gratification to him that within the last two hours that darkness *had* been dissipated; and he was now able to say that in Warwick,—under their feet,—and in Guy's-cliff, there were the remains of many extinct species and genera of animals, whose names were as yet unuttered in England. He then held in his hand the scales of lizards that were once basking on the shores of the lakes at Leamington; and there had been discovered in Leamington itself, the remains of other animals that lived in other times. He ventured to say with as much confidence as if endowed with the spirit of prophecy, for he knew from geological inspection, and from example added to example, that under this town, Leamington, and the surrounding neighbourhood, were the remains of thousands of Elephants, of Rhinoceroses, of Tigers, of Buffaloes, and a variety of other animals which he could enumerate. But, would his hearers say, how did he know that? He was shewn that morning, at the house of Dr. Lloyd, at Leamington, the leg bone of a large Elk, or species of Red Deer, which he held in his hand, and which was then damp with the clay out of which it was extracted, and in which it had been so long preserved. From a shell which had been discovered in Leamington, also, he was satisfied that, before the creation of the human race, Leamington was the site of a large and ancient lake, which, like many that were also in the neighbourhood of Rugby, became the receptacle of the dead carcases of the Elephant, the Lion, and the Hippopotamus, which animals were now only found in warmer climates. He had also the tooth of the under jaw of a young Rhinoceros in his teens, and as a proof that those animals once existed in this kingdom, he might simply say that teeth did not grow without heads. If the workmen at Leamington were to be informed that the remains which they might discover were convertible into *beer* they would take great care to preserve them. He also saw before him a piece of granite picked up at Leamington, and which he knew came from Cumberland. He knew well that this was a class of pebbles which were

scattered over the centre part of England by some vast inundation, and which were found sometimes in Staffordshire, and as far as Worcestershire, but which he never saw found in this neighbourhood. It was not the general opinion now, as it was twenty-five years ago, when it was considered that these assertions were but theories invented by gentlemen in their closets; but they were the result of sound and logical deliberation, and founded upon discoveries and experience which none could dare to contradict. From his having made the discoveries he had at Rugby and Warwick, he should lay claim to a memorial right upon the land, upon the same grounds that the captain of a vessel planted his sovereign's standard on a newly discovered island: he had shewn them his bill of fare, and in twelve month's time he was certain the table of the Natural History Society of Warwickshire would be richly spread. As every father had a right to christen his own child, he should claim the privilege of naming the strata he had discovered—*keuper*; a description of earth which exactly corresponded with that at Wirtemberg, the bottom of the Severn, and many other places in this country. When these remains are first found they should be cautiously handled; they must not be extracted by a hammer, but carefully cut round with a knife, and when taken home would soon become hardened and secure. There was also the arm-bone of a Rhinoceros found at Rugby, and he had no doubt that this was once a swampy climate fitted to the species of animals which, at some remote period inhabited this country. There was also extracted near this place the shoulder blade of an Elephant, which, upon the highest authority, must have been sixteen feet high, and of course a much larger species than those now found in India. In New Holland, too, where only Opossums and Kangaroos, and that species of animals were now existing, had been found the remains of an Elephant of an extraordinary size. The learned Professor made numerous other very entertaining and able observations upon the various instances of the remains of animals which had been discovered, and which must have existed before the creation of the human race. He concluded the first part of his address by entreating the members of the Society to continue in the progress they were making, eminently important to the interests of science, not only in England, but throughout the world.

Dr. Conolly then proceeded to read the Report of the Committee, which commenced by stating that the Society had its origin in a smaller association, of which the object was to investigate the claims of phrenology to be considered a true science of mind. The collection of numerous casts, the preparation of skulls of several of the lower animals, and the accidental addition of some human skulls discovered in digging foundations where an ancient religious house was supposed to have stood, concurred, with other circumstances, to suggest to that Society the advantage of widening the sphere of their observations, so as to comprehend a fuller study of the structure, functions, and habits of various classes of animals; and the di-

rection thus given to their thoughts led, by degrees, to the further extension of their views, so as to include the natural history of plants, and inquiries into the geological character of the neighbourhood; and for the accomplishment of these objects it became evident that the assistance of a larger society was requisite, which might give encouragement to all the branches of Natural History, in the most extended sense of the term. It was supposed that it might at least be practicable to collect materials for a complete account of the Natural History and Antiquities of Warwickshire; and that in all probability materials might gradually be collected for a Museum of general Zoology, Botany, Geology, and Mineralogy." The encouragement received by the projectors of the Society at the preliminary meeting in the spring, fully realized their most sanguine expectations; and the subsequent progress of the Institution has been highly satisfactory. The report, which was very ably drawn up, after alluding to the subjects of meteorology, statistics, and archaeology, concluded by an assurance that the prospects of the Society may be declared to be of the most cheering kind, and that the Committee entertain a confident expectation that Warwickshire will, in the course of a few years, possess a museum on a scale commensurate with the wealth, liberality, and intelligence of the county.

Dr. Lloyd commenced the Report of the Honorary Curators by alluding to the liberality of the members who had contributed so freely from their collections of natural objects. Among these may be mentioned a rare and excellently preserved fossil fish, from the Lias Lime quarries at Wilmcote, presented by Mr. Greaves, of Radford. This fish was sent to Professor Agassiz, who determined it to be a new species of the genus *Tetragonolepis* and gave it the specific name *Angulifer*.* A list of donations followed, which we regret we have not room to enumerate.

On the conclusion of the report, the Chairman having requested Dr. Buckland to continue his interesting address, the learned Professor proceeded to give some lengthened and able observations upon the different strata of earths which had been collected by the vast eruptions of water, which had so often inundated this world before the creation of man. After recommending the science of geology as one which added strength, if possible, to the truths of revelation, and reading several extracts from the treatise he has lately published, the learned Doctor sat down amidst the loud and continued applause of his numerous and respectable audience.

A vote of thanks was then proposed to Dr. Buckland, and Sir H. Dryden, and the meeting dissolved.

* This beautiful fossil was figured in the 13th No. of the *Analyst*, with a letter from the learned Professor.

WORCESTERSHIRE NATURAL HISTORY SOCIETY.

THE autumnal course of lectures of this Institution was opened by Dr. Conolly on the 4th of October. The learned physician commenced his lecture as follows:—"Addressing you in this new and elegant building, of which, when I was last here, I saw but the foundations laid, but which I have now the gratification to find advancing fast to completion, and consecrated to the noble purpose of promoting the great science of Natural History;—surrounded, as I am, by specimens of the amazing varieties of forms contained in the section of the universe to which our faculties are limited, and with which our physical existence is associated; looking upon this scene, and upon these collections, so characteristic of an age of earnest and wide inquiry, in which philosophy, divested of vain aspirations, is brought from the clouds, dwells among men, and questions nature with diligence but without presumption; I cannot but reflect that the social institutions of each age are the durable monuments of its tendency and character; that they enable us to see the direction given, at any specific period, to the exertions of human intellect and human feelings.

"I recal to memory that in remote times they do but speak to us of the power exercised by the instructed few over ignorant masses of the people, and seldom for useful or imperishable ends; and I contemplate with unspeakable satisfaction the more generous spectacle exhibited by the institutions of our own day, in which, neglected no longer, no longer consigned to all the miserable consequences of mental darkness, all ranks of society may be beheld, awakening from the sleep of ages, and exercising the highest faculties which the bounty of God has imparted to them, to produce effects conformable to his large benevolence.

"The remains of this age, the monuments on which the minds of posterity will most gratefully dwell, will surely be the memory of these and other great institutions of knowledge; institutions not surrounded by the splendour reflected from arts of hostility and wide destruction, but adorned by the serener glories arising from the steady improvement of communities, for the ultimate good of all.

"If I ever evinced any zeal in the cause of Natural History Societies—if on this spot I feel that zeal warmed and increased—it is not that I set an exclusive value on the dazzling collections which they furnish opportunities for displaying, but that I feel satisfied that such societies are really subservient to the highest efforts of the best and most enlightened minds for the improvement of society in general."

After giving a brief sketch of the progress of Natural History, and making some remarks on the encouragement at present given to its pursuit, Dr. C. made several observations on the formation and constitution of Natural History Societies, some of which we quote:—"The Society which I have now the honour to address

presents so excellent a model of an institution for promoting a knowledge of Natural History, that I consider nothing would be more advantageous than that its regulations should be adopted in every county in the kingdom. By forming a Natural History Society in every county, the interest of each county would be most conveniently centered in its own institution. One room, or one portion of every such institution, being devoted to the reception of objects illustrative of the Natural History and Archæology of the county or district, the rest might be opened to contributions illustrative of the same sciences in all parts of the globe. In this way each county might possess at least one collection, in which might be read the whole Natural History and part of the historical monuments of the county; and as duplicates became multiplied, a central collection in London (in the British Museum) might present, if it does not already present, a view of the natural character of the whole island. Of each county a compendium of Natural History might also be drawn up, full of information useful to every class of the people.

“Donors to such a museum, although not so munificent as they have proved in Worcestershire, would doubtless be found. Annual subscriptions would provide for occasional and judicious purchases; and, even under circumstances unfavourable to the early formation of a large museum, a small and instructive collection might be formed, which would be gradually enlarged into one of importance. The founders of such institutions must not limit their views to producing an immediate effect, but look forward to the results of the exertions of several years. Whilst opportunities would thus be afforded of estimating and improving some of the natural resources of the country, another very great benefit might, and doubtless would, arise in some counties. In the neighbourhood of such a museum might be fostered the genius of some youthful naturalist, destined still further to explore some of the kingdoms of nature, and, like Cuvier, who began his labours with no greater advantages, to illustrate some yet obscure department, to confer honour on his country, and the blessing of more extended knowledge on mankind.

“Besides providing for quarterly and annual meetings, for communications and for regular lectures, it should be recollected that Natural History has yet been very little cultivated by general students in this country, and it should be a principal object in every society to assist beginners. Duplicate specimens should be collected whenever practicable, that one set might always be accessible to the learner, who often cannot learn without touching and minutely examining the specimen. The most immense collections are of little value when once they are considered as merely so many objects to be gazed at, without being studied and understood.

“It is also exceedingly to be desired that to each specimen there should be affixed its English name or familiar appellation, as well as its scientific denomination. No single cause has done more to repel students from different branches of natural science than the

profusion of hard names by which they are obscured. In most of the works on Botany this fault, or affectation, is so prevalent that they are utterly useless to the young or unlearned reader ; and the Floras and Introductions professing to familiarize the science, require vocabularies, or rather, it may be said, translations, to make them intelligible and instructive.

"The value of plain demonstration, lectures, and of familiar and frequent explanations, is evident ; and, when possible, nothing would tend so much to diffuse a love of geological or botanical science as excursions into interesting parts of the county for the purpose of examining on a large scale, or even of collecting specimens. The proper study of ornithology, also, requires opportunities of examining the habits, listening to the notes, and even watching the attitudes and *manners* of birds : this is even an essential preliminary to putting up birds in a natural manner in a museum ; for we sometimes see nothing but the plumage of a bird recognisable, the body having lost its proportions, and the whole figure its proper character. To each museum, where practicable, should be attached a curator, or sub-curator, who would give practical lessons on the art of preparing animals for the museum ; teaching the best modes of skinning and stuffing quadrupeds, birds, reptiles, &c., and of preserving insects. Many valuable specimens are lost for want of knowledge of this kind. The classification of objects is sometimes more clearly understood by the student from the inspection of a small than of a large number of specimens ; a fortunate circumstance where the collection is limited, and one that ought not to be forgotten where resources are more ample.

"In addition to such large and expensive works as are not often found in private libraries, every society should possess several copies of the most approved elementary works ; as well as numerous maps and sections, both ordinary and illustrative of physical and geological geography. A correspondence might, of course, very usefully be instituted with some of the London and provincial institutions, and specimens exchanged, and facts communicated from time to time. Great facility for the latter kind of intercourse is now afforded by at least two provincial publications of a highly respectable character : the *Analyst*, a considerable portion of which is assigned to country societies ; and the *Naturalist*, a work entirely devoted to Natural History. It is gratifying to me to be able to observe that both of these very useful works originated in Worcestershire."

Dr. Conolly's recommendation, that the county museum shall be thrown open, under certain regulations, to the working classes, deserves consideration. He expresses this recommendation in these terms :—" I would beg leave to say, also, that nothing would afford me more pleasure than to know that all such institutions, and especially the collections in the museums, were open, at stated times, and free of expense, to the working classes of the people. If this were done by tickets at the disposal of their employers or of the subscribers, every objection to it might, I think, be removed. Many of

them are already fond of Natural History ; some of them have made surprising collections, and they have been observed to be particularly interested in the more splendid collections made by persons enjoying the leisure, fortune, and opportunities which do not fall to their lot. To those who feel an admiration of natural objects, but who seldom can go forth into the great museum of nature, where the wild flowers bloom and the free birds fill the air with melody—and to all who are denied the amusement of travelling—access to a museum in which the rarities of nature's workmanship are arranged and displayed, offers a most welcome and an improving pleasure, in the place of pleasures which destroy health, independence, and comfort. It should not be forgotten that Linneus and other great Naturalists to whom science is deeply indebted, began their studies in poverty and obscurity. No philanthropy is more liberal and wise than that which increases the refined and innocent enjoyments of persons whose situation precludes them from all the daily and hourly pleasures partaken of by those in better circumstances."

A large portion of the lecture was devoted to shewing the interest belonging to the different branches of study comprehended under Natural History, and the facility with which very young students might be pleasurably engaged in such observations as formed the best ground-work of such studies ; drawing his illustrations from geology, botany, and zoology. The importance of meteorology was strongly urged in reference to the yet unknown causes of epidemics. The object of statistics—to which, until lately, very little attention has been paid—was thus spoken of:—

"There is yet one great application of the faculty of observing which should be kept in view in every Natural History Society, as strictly belonging to the natural history of *man*. I mean the application of observation to the subject of statistical details. This branch of inquiry relates to all that concerns man's worldly welfare, including his moral improvement. It is the science which teaches by examples how to preserve the life of the young ; how to secure good and abundant food and clothing and shelter to all ; and how to give a safe and useful and profitable direction to human activity and energy ; to bring the propensities under the dominion of reason and religion ; to increase industry, virtue, and prosperity ; to preserve the health, the strength, the intelligence, and even the beauty of human beings ; and to secure the enjoyment of many of these blessings to a good old age. It is therefore of all sciences the greatest in its scope and objects, and may be called the science of improving mankind. The information collected for this department comprehends the effects of different occupations, and of different localities, on health and longevity, as well as on the manners and morals of the people : and it may serve to shew some of the connexions of the different branches of Natural History, if I mention that the geologist, from the mere description of the character of any line of country, can pretty well understand what must be the productions, the pursuits, and even the general state of health of the inhabitants ; whilst the botanist and the entomologist would equally predicate

the plants there growing and the insects there abounding. Already have the details connected with this branch of inquiry communicated most important truths to all communities; as that life and death mainly depend on the *prosperity* of the circumstances which surround us; that the mortality of any given country, or town, or hospital, is regulated by the poverty or wealth, the knowledge or ignorance, the misfortune or success, that there exert their influences on the minds of the inhabitants; in short that all the circumstances which tend to shorten life are such as tend to make it miserable."

After making some remarks on the proper objects of archæology, and their close connection with the natural history of man, Dr. Conolly concluded his lecture by an appeal to the younger part of his audience, quoting numerous instances of the pursuit of Natural History under difficulties, and of the mental calmness and dignity resulting from an habitual study of the perfect works of the Creator; and after alluding to the activity of the present age, both in the cause of science and of charity, concluded with these words:—"Amidst these institutions for bettering the condition and improving the faculties of mankind, we may always reflect with pleasure upon those of which the object, as of your society, is to unfold the wonders of the earth, to display the beauty of the vegetable world, to exhibit the various forms of animal life and enjoyment, to investigate the properties and influences of the air, and to develop the causes of diseases and suffering, of misfortune, crime, and premature mortality, in order that they may be avoided, and the happiness of all rational creatures increased: All these seem, in every way, the proper object of man's contemplation; the views they encourage blend with those higher views which are directed towards *another* and more glorious world, wherein all that is beautiful in sense and affection, all that is great in intellect, may yet be found, but amplified and raised—where virtue will be enlarged, and where sorrow and pain will have no place—and, lastly, where the soul, purified and freed, may yet be occupied in the contemplation of the endless works of God, and find in that contemplation *new* motives for obedience, for thankfulness, and for praise."

YORK PHILOSOPHICAL SOCIETY.

THIS institution has recently received a magnificent present from one of its members, George L. Fox, Esq., of some of the bones of the Irish Elk: it wants the bones of the hind legs, except one femur; but it has been mounted in its present state, and it is hoped that the hind legs will be procured at some future time. It is the largest specimen hitherto found, and was dug up on Mr. Fox's estate in Ireland. Some of the members of the Society have proposed furnishing it with artificial legs; but we beg to enter our decided protest against marrying so splendid a specimen of the work of God, by any admixture of human architecture.

CENTRAL SOCIETY OF EDUCATION.

SIXTEEN years have elapsed since Lord Brougham, then a member of the House of Commons, called the attention of the legislature and the country to the subject of the education of the working classes ; and although, from that time to this, little has been done towards supplying the deficiencies then, in a measure, discovered, one good has, at any rate, resulted ; the minds of people have become habituated to the subject, and the idea that all classes of men should receive such an education as will fit them for performing their duties as members of society, has almost ceased to wear that badge of revolution—novelty. In a little while, John Bull may persuade himself that he is convinced, and he will then move towards the attainment of the object with all that determination, boldness, and liberality, which characterizes his other undertakings.

The ridicule that was cast upon all who advocated the emancipation of the slaves, is still fresh in the memory of the youngest amongst us. The common sense of England seemed offended at the mention of such an absurdity : but those who undertook to plead the cause persevered ; they knew that what they required was practicable, was reasonable, was right ; and all that they had to do was to exhibit the subject, for a sufficient length of time, before the eyes of the public to convince it that such was the case. It is recorded of Sir James Scarlett that, when once addressing a jury, he repeated the same argument over, and over, and over again. "What were you about ?" said one of his friends to him, when he had gained his cause, "you repeated that argument, at the least, twenty times." "Did you not observe," replied the practised advocate, "that yonder stout farmer, to whom the rest of the jury greatly deferred, was determined not to have a new idea put into his head against his own consent ? How sturdily he put his hands into his pockets ! how I repeated my argument to him until he got accustomed to it—until I ascertained, by his countenance, that he said to himself 'Aye ; that 's just what I was thinking myself !' I then knew that my cause was won." The Central Society of Education, at whose head we perceive Lord Denman, has been organized at a happy moment, for it has no longer the novelty of the subject to contend with ; and it may now apply its efforts to the consideration of the subject itself. The Prospectus of the Society is now before us, and from it we find that it is proposed "to collect, classify, and diffuse information concerning the education of all classes in every department, for the purpose of ascertaining by what means individuals may be best fitted, in health, in mind, and in morals, to fill the stations which they are destined to occupy in society." The subjects for investigation are divided into five principal heads :—1. Primary education ; 2. Secondary education ; 3. Superior or university education ; 4. Special or professional education ; 5. Supplementary education.

The first labours of the Society have, we have reason to know, been directed to the collection of facts respecting the actual condition of the poorer population of a district of the metropolis. This it is now occupied in examining with the greatest accuracy, going from street to street, from house to house: not contenting itself with ascertaining merely the literary attainments of the children, but observing all those circumstances over which an individual has a control, and which, consequently, indicate with certainty *the education he has received and the education he is in want of*. The consequences of this inquiry will, we are led to believe, be most important, as it will enable the Society to state precisely, in numbers, the exact quantity of particulars upon which its affirmations with regard to any general fact is grounded. The condition of the people, in a moral, intellectual, and physical point of view, in our large towns, is such that any statement with regard to it, other than such as the Central Society of Education is now qualifying itself to make, would be disbelieved. Those who only ride or drive through the wide and clear streets of our metropolis could not credit that the state of the mass is such as it is. An intelligent foreigner who visited England some time back said that, for his part, he could never see the poor, nor where they lived.

From the newspapers we perceive that, in Nottingham, a public meeting has been held, and a society of education formed for co-operating with that in London, which has undertaken to conduct a similar inquiry to that which we have just mentioned in that town and neighbourhood. In other localities the same has, we trust, been the case;* for we feel an assurance that the result of such inquiries will form the strongest and most cogent argument in favour of national education, and the surest indication of what it should be. Of all branches of the inquiry which the society has proposed to itself, that which extends to the greatest mass is the most important, and to this we trust that it will, in the first instance, apply its undivided attention. If we might point out two or three points which stand out as prominent, we should enumerate, 1st. That of parents being unable to permit their children to remain at the schools for a period sufficiently long to derive full benefit from them; 2nd. The incapacity of present masters; 3rd. The funds for the support of schools; 4th. The hands in which the power of controlling them should be vested; 5th. Whether it is not justice to children and to the State to prevent parents from neglecting their education.

The first of these, we are disposed to think, might be met by alternating study with profitable industrial occupation: experiments to this end have, to our knowledge, been tried, both in this country and on the continent, with some success. The second is, perhaps, the greatest difficulty which those who are anxious to

* A Committee has been formed in Birmingham with the view of instituting a similar inquiry.

effect an immediate improvement in education have to contend with ; in fact, it is insuperable. Schoolmasters must be trained and qualified before any sound and extended system of education can be adopted with effect. How this can be best done, and what should be a schoolmaster's qualifications, should be immediately inquired into. Upon the other three points we also entertain strong opinions ; we think that so important a business as national education ought not to be left to casual charity ; we do not think that each school should be allowed to receive the character which the caprice of a patron, the ignorance of a schoolmaster, or some other such accident may chance to give it. While, with regard to the last point, we cannot but admire, and desire to see imitated, the enlightened policy of Prussia in this particular.

For the present, we shall content ourselves with this brief notice of the society, with the intention of returning to a consideration of its objects and proceedings in a later number.

The qualification for members of the society is one pound annually, or one sum of ten pounds ; and we trust that the friends of education will not hesitate to come forward to support it when they know that among the members of the Committee are—M. De Morgan, the Mathematician—Mr. Lay, the late Editor of the *Journal of Education*—Mr. Ewart, M.P.—Mr. Hawes, M.P.—Sir C. Lemon, the President of the Statistical Society—Sir W. Molesworth, M.P.—the Lord Advocate—Sir R. Musgrave, M.P.—Mr. W. S. O'Brien, M.P.—Mr. Porter, Vice-president of the Statistical Society—Mr. Poulett Scrope, M.P.—Mr. Shutt, M.P.—Mr. Serjeant Talfourd, M.P.—Mr. Parden, Librarian of the House of Commons—Mr. Ward, M.P.—Mr. Wyse, M.P., the Chairman of the Committee—and Lord Denman (who, in the House of Lords, said that for the State to have a right to punish, it must educate) is President. B. F. Duppa, Esq., is the Honorary Secretary.

ST. JAMES'S ORNITHOLOGICAL SOCIETY.

THIS Society is instituted for the purpose of forming a collection of water birds in the garden of St. James's Park ; and its operations will subsequently be extended to the waters in the other parks, if the funds of the society be found sufficient. The first object will be to exhibit a complete collection of British *Anatidæ*, both resident and migratory. The Society already possesses a considerable number of the desired species, and has, besides, some specimens belonging to other genera. It is intended to keep the whole, as far as practicable, in a state of nature, and the collection, being formed in the public parks, will, of course, be open to the view of every one.

As there is in London no other exclusively Ornithological Society, it is unnecessary to point out to the Ornithologist the advantages which may result from an institution possessed of a locality so admirably calculated for a collection of aquatic birds, and for affording facilities for observations on the changes of plumage from sex, age, or season, which are so interesting to naturalists, and so difficult to be observed elsewhere. It is, moreover, to be hoped that the Society will not direct exclusive attention to the formation of a collection of aquatic birds, but that the members will take into consideration the whole range of Ornithology, have meetings for the reading of lectures and essays, and for discussions on topics relating to the science. It might then, if well conducted, and with the addition of a good library and museum, become one of the most useful Natural History Societies in existence.

It is not, however, to the scientific alone that the Society appeals for support; it confidently addresses itself to all lovers of the beauties of Nature; to all who can appreciate the charm which the feathered race, the most beautiful portion of the animate creation, are capable of lending to ornamental water. To render the proposed collection worthy of the metropolis and the scene, will require a considerable expenditure, but the amount of annual subscriptions, (which are usually £1) is rapidly increasing, and presents of aquatic birds continue to be received.

The proceedings of the Society are sanctioned by the Commissioners of Woods and Forests; the Earl of Liverpool is President; and the following noblemen and gentlemen are amongst the members, who already consist of upwards of one hundred:—The Earl of Derby, the Earl of Orkney, the Duke of Northumberland, Earl Fitzwilliam, Sir J. E. Wilmot, Bart., M. P., Earl of Rosslyn, Lord Hill, Lord Melbourne, Lord John Russell, M. P., Viscount Sidney, the Rev. E. Stanley, Captain Bowles, J. W. Childers, Esq. M. P., Dr. Horsfield, Edward Jesse, Esq., Rev. F. O. Morris, Robert Mudie, Joseph Sabine, Esq., William Swainson, Esq., (Hon. Member of the Committee), and William Yarrell, Esq.

Donations of birds are to be addressed to the care of Mr. Bailly, poulterer, Davies-street, Berkeley-square; and communications to the Secretaries should be forwarded, post paid, to Robert Lemon, Esq., 6, Stafford-row, Pimlico, where also subscriptions are received.

YORKSHIRE INSTITUTION FOR THE DEAF AND DUMB.

PUBLIC institutions for the deaf and dumb have been supported in this country since the year 1792, when the Asylum in Kent-road, London was formed. Since that period, institutions have been established at Birmingham, Manchester, Liverpool, Exeter, and Doncaster. There are, also, institutions at Edinburgh, Glasgow, and Dublin. The institution at Doncaster was formed in 1829, for the instruction of deaf and dumb children of the county of York; but such children of other counties are admissible into it under certain provisions. It does not exist altogether on the gratuitous principle. The parents of every child admitted, or the parish to which it belongs, have to pay two shillings and sixpence a week towards its support, as long as it continues in the institution; these payments are required to be made quarterly, and in advance. No child is admitted under nine years of age, none are suffered to remain after sixteen, and the term for which a pupil is allowed to continue is five years. Another class of pupils is also received, who pay £20 or £25 per annum; the former sum if they reside in the county of York, the latter if they reside in any other county. The reason why a larger sum is charged to pupils from other parts of the country than Yorkshire is, that the institution was established entirely at the expense of the nobility and gentry of that county. In case of poor children of other counties being taken, £19 is allowed to be subscribed annually by residents in the county to which such children belong, £6 annually being paid by the friends of the child, or by its parish. The establishment is near the race-course at Doncaster—an airy and a salubrious situation. It was opened for the admission of pupils in November, 1829, and placed under the direction of Mr. Charles Baker, formerly the second master at the Birmingham Institution for the Deaf and Dumb. In 1831, the committee, in whose management the superintendence of the institution is vested, agreed for the purchase of the whole premises, in a part of which the school had been commenced. This purchase was made at an expense of £3,000, and about £500 have since been spent in alterations. These premises consist of a house capable of accommodating nearly one hundred pupils, together with apartments for the master and his family, for the second class pupils, for private pupils, and for all the requisite assistants; three acres of land are also attached to the premises. In 1829, fifteen boys were admitted; in 1830, this number was increased to thirty-two—twenty boys and twelve girls; in 1832, the number of pupils was increased to fifty; in 1834, to sixty; and the present number of pupils is 70—thirty-eight boys and thirty-two girls. The annual income, derived chiefly from voluntary subscriptions throughout the county of York, exceeds £1,000. The payments on behalf of pupils, during the

year ending April 1, 1836, was £550: so that there is every prospect of the benefits of instruction being extended to the full number of pupils the house will accommodate.

The children are taught on Pestalozzian principles, which, being purely synthetical or inductive, are peculiarly applicable to the instruction of a class of persons whose observations, however extensive, have to be reduced into language by a gradual process, beginning with the simple or elementary parts, and ascending by regular steps to those that are more abstract; thus the *unknown* is founded on that which is *known*. The pupils are generally taught to read and understand ordinary books, and the power of acquiring still further knowledge is imparted to them by the attention that is given to make them understand language; they are acquainted with the elementary principles of geography, arithmetic, and history, and those who show a natural talent for drawing, receive lessons in that art. Great care is also bestowed on their scriptural education. In addition to their school labours, they are all trained to habits of industry; the girls by being instructed in every department of household labour, sewing, making and mending clothes, &c., and the boys in those occupations usually performed by men-servants, and in the different branches of gardening. There is also a work-shop on the premises, for those whose genius is mechanical. From the commencement of the institution to the present time, 121 children have been admitted; fifty-one have left, entirely or partially instructed, according to the time they continued in the institution, or their natural capacity for improvement. Many of those who have left school are pursuing various employments with credit to themselves, and to the satisfaction of their masters. The managers consist of a head-master, a matron, two assistants, two deaf and dumb assistants, and a work-mistress. The honorary secretary is the Rev. W. C. Fenton, vicar of Mattersey. The following gentlemen, amongst others, were in the committee for the past year:—Sir W. B. Cooke, Bart., Wheatley Hall, mayor of Doncaster; E. B. Denison, Esq.; P. D. Cooke, Esq., Owston House; Mr. J. Branson; Dr. Robinson; Dr. Hardy; Dr. Scholfield; Rev. Dr. Sharpe, of Doncaster; Rev. A. B. Wrightson, Campsall; and J. W. Childers, Esq., M.P., Cantley.

CRITICAL NOTICES OF NEW PUBLICATIONS.

Geology ; with Remarks on Bishop Sumner's Appendix to his work entitled "Records of Creation." By the Rev. R. Fennell. 1836.

By a certain party considerable exertions are strenuously making, not merely to invalidate the theory, and neutralize the facts, adduced by Dr. Buckland in favour of the pre-existence of the globe prior to the period alluded to in the Mosaic cosmogony, notwithstanding the intimation conveyed in the very words of the text in Genesis, that the earth was at that very time a mass of matter "without form and void ;" but actually to undermine the character and detract from the merits of this respected and talented writer, by representing him as little better than an infidel. It is not our intention to enter into the wide field of argument connected with this question, but simply to shew, by referring to a work of one of his opponents, how far their reasonings may be depended upon by any unprejudiced and impartial individual who is anxious to ascertain on which side the truth really rests. That the reverend writer may have as little to complain of as possible from our criticisms, we shall, with but a trifling measure of note or comment, leave him to speak for himself in his own words.

Of his capacity for undertaking the investigation as a philosopher or a divine, the reader will form a tolerable opinion from the very opening of his preface, in which he candidly says—"Of *geology* I know but little : I once endeavoured to understand *something* of its outlines ; but I soon found myself in a maze. It appeared to me to be a science of opinions, and scarcely one of those opinions could I find supported by two authorities !" A rather unfortunate conclusion this, when it is evident to ninety-nine out of every hundred who ever lent their minds to the subject, that Geology is a science in the investigation of which its upholders pique themselves on *facts*, and not opinions.

His powers for arguing the merits of the question may, in the next place, be estimated by another reference to his own words, for, with equal candour, he says, "When I argued I was laughed at." We hope, after this honest confession, that when he appears before the public again, (as he assures us he shortly intends to do in a poem, with copious notes, astronomical, geological, and religious), he will, by a reconsideration of his objections, become a better reasoner, and more capable of occupying the post for which he claims his fitness, in order to "watch with jealous eye every approach against the citadel of divine truth." In his present position he takes part, and assumes an unfortunate identity with a bird which, of all the fowls in the air, we are surprised at his choosing. "The cackling of a goose," he observes, "once saved the capitol ; and if

by shouting I can but rouse attention to the sappers and miners beneath our walls, I shall be no '*vain babbler*.' "

So much for his preface, to which alone the above quotations refer. Now for his work; in which he starts by assuring his readers that Moses "tells us *all* that is necessary to be known of the creation of the globe we inhabit." This is, surely, not quite fair to Moses; for we have generally understood, on the authority of almost every biblical critic, that Moses told us very little relating to the physiology of the globe; for this obvious reason—that he was writing for an entirely different purpose, addressing himself to the Jewish nation, who were not deeply read in natural philosophy, in order to instruct them on those points chiefly that had reference to the origin and moral existence of the human race. When Mr. F., therefore, speaks of the "folly and presumption" to which geologists have exposed themselves, we leave it to his maturer consideration, whether it may not strike him that a good deal of "folly and presumption" ought not in equity and fairness to be transferred to his own quarters. If he would condescend to take a particle of advice from such humble authorities as ourselves, we would earnestly recommend him to erase from his next edition the following passage:—"I must lay down my theology when I take up science," since, for reasons which may not yet have come across him, but which cannot but most forcibly strike every one who has the most moderate power of reflection, this cutting asunder all relationship between Religion and Science may, at no very distant day, lead to some very disagreeable results, by no means favourable to the permanent value or utility of that church itself of which he is no doubt a zealous and consistent member.

In the next page he quarrels with the geologists for hinting that the earth was ever in a state of "chaos" and confusion. "Chaos," with keen irony and a sort of *Io triumphe*, he observes, "may be a classical term—but not, as he humbly thinks, a scriptural one." Now, really, we do think, that were the terms, "without form, and void" to be condensed into one word, the word above all others suited to, and conveying the sense and meaning would be, unquestionably, chaos.

We thought that not a single individual acquainted with the laws of motion acting upon fluids, remained to deny the geological position, that this earth must have been once in a fluid state. We were, however, quite wrong; the Rev. Mr. Fennell being of a different opinion, and to such a degree as to assert that "this *fluid state* would destroy the whole fabric of modern geology." We refrain, after such an assertion, to enter into any discussion on the oblate spheroidal form of the earth, which those who know any thing about mechanical science, admit as an unanswerable proof of the reverse of his position. The opinion forced upon us by almost every operation of Nature, that the Creator effects his purpose by gradual processes, marvellous to say, strikes him as absolutely heretical and heathenish:—"I cannot divest myself of the idea that

there is something in the thought derogatory to the omnipotence of the Almighty, and, consequently, that it is impious! I cannot bring myself to believe, but that books containing such unguarded expressions tend to disturb principles of infinitely more value than all the discoveries geologists ever made!"

Many a true word we know to be frequently spoken in jest: our author may be cited as a case in point. "*If I am not too obtuse,*" he sportively says, "the geologists would have us to believe (what he is very angry with Bishop Sumner for believing too) that the creation recorded by Moses was a mere reformation;" and then he becomes quite ironically merry, at their's and the Bishop's expense, exclaiming "O! these reformers," &c. And yet this severe anti-reformer—this anti-geological conservative—has his own little private trading stock of peculiar opinions, quite as startling to us as any of the assertions of his heterodox geologists. Thus, he flatly denies "that there were any carnivorous beasts previous to the deluge." He does not seem to be at all aware what a serious scrape he may be getting into, by thus unadvisedly and boldly advocating the doctrine of new or successive generations of animals adapted to times, seasons, and circumstances. As, however, this is his own affair, we leave him to extricate himself as best he can.

Sometimes, notwithstanding his dislike to scientific solutions of difficulties, he, nevertheless, sets up for a philosopher, and explains obscure points: for instance, reminding us "that the waters *prevailed* 150 days, and did not *subside* in much less than a year," he infers that this was quite enough "to have reduced the then young earth to a pulp." A pulp! That is to say, that mountains and masses of granites and rocks of all kinds and qualities were all melted into a pulp by the action of water in a year. And yet this Rev. Mr. Fennell would fain persuade us that he is a reasonable man, in whose lucubrations the anti-geologists are bound to place implicit credit.

Bishop Sumner has been so unadvised, it seems, in his admirable work on the *Records of Creation*, as "to speak of a process," as Mr. F. points out, "by which our system was brought from confusion into a regular and habitable state." Now we really thought we might believe his Lordship—not because he asserts it, but because Revelation itself tells us so, and experience proves it beyond all controversy;

"The court awards it, and the law doth give it;"

but no such thing: Mr. Fennell contradicts the Bishop *in toto*, and roundly asserts that "it never was in confusion—that all was formed smooth and perfect without change or gradation," and that "lofty trees arose from the earth in all their magnificence in a moment of time," &c.

In the next page we find a still more extraordinary declaration, in which we quite agree with him in his definition of himself. The Bishop gives it as his belief, in his above-mentioned work, "that no

rational theologian will direct his hostility against any theory which acknowledges the *agency* of the Creator, and only attempts to point out the *secondary* instruments he has employed." What will the reader suppose is Mr. Fennell's comment upon this? We defy him to guess. Neither more nor less than a confession of his own irrationality. Hear his words:—"Most assuredly I am that irrational being!" After this we think it needless further to follow one who "sees (we are no longer surprised, indeed!) no necessity for precipitation and crystallization" in the rocks, and chemical or mechanical deposit of the earth's crust.

As the world, he probably supposes, may be impatient for his promised poem, after such an exhibition of his prose, he kindly adds a few extracts by way of staying the appetite of public curiosity and impatience. As a specimen, we can only afford space for his reasons why no remains of human skeletons have been found: they are quite on a par with those we have quoted, and as satisfactory, no doubt to himself, whatever they may be to others:—

"They search for remnants of the human frame
Amongst their fossil reptiles. Fruitless be
Their search! Of dust was man created;
And unto dust doth he return. Nor art
Egyptian, nor alchemic nature,
Shall preserve what nature's God have given
To the winds till the great final day."

Statistics of Phrenology; being a sketch of the progress and present state of that Science in the British Islands. By H. C. Watson. Small 8vo., pp. 252. London, 1836.

MR. H. C. WATSON divides his *Statistics of Phrenology* into five distinct sections and a supplement; and in publishing this sketch he professes to be actuated by the hope of lending some small assistance towards accelerating the future advances of this branch of science.

SECTION I. comprises an historical sketch of the progress of Phrenology, considered in respect to its reception by the public. Mr. W. begins his history with a notice of Gall's first lectures in 1796, with an account of Spurzheim's first visit to England in 1814, and his proceedings there till the publication of his *Physiological System* in the following year. The progress of the science is then traced onwards to 1825, when Mr. Combe's *System of Phrenology* appeared, and gave rise to a series of polemical discussions not very creditable to the principles and judgment of the writers by whom Mr. C.'s doctrines were controverted. This is followed by examples of opposition to Phrenology subsequently to 1825, while an animated view of its future prospects concludes the history. In the future prospects of the science, says Mr. W., we find nothing to darken its brightened aspects; indeed, the onward glance shews everything more bright and hopeful. The men of

note, whose authority and power were opposed to it, are undergoing the lot of their race, while the disciples of Phrenology are becoming their successors, and will assuredly train the rising, and raise up the next, generation in the full and unprejudiced adoption of phrenological views: in thirty years hence, anti-phrenology will be a subject for the historians of things that have ceased to exist.

SECTION II. exhibits the present state of Phrenology, considered as a branch of science or philosophy. Its contents are—a definition of Phrenology, its leading principles, evidences and uses; objections to it stated and considered; suggestions for the study of it, for diffusing a knowledge of it, and for checking uncandid opposition to its advancement; and comments on Mr. W.'s private correspondence.

SECTION III. is occupied with an outline of the local diffusion of Phrenology, and includes a description of the steps taken to explain its principles in upwards of eighty different places. The statements in this part of the book are founded on replies to queries in a printed circular, addressed by Mr. W. to several gentlemen whose names are known in connexion with Phrenology.

SECTION IV. is devoted to the literature of Phrenology, and embraces chronological lists of phrenological and anti-phrenological works and writers; a list of persons giving testimonials to Mr. Combe and Lord Glenelg, in recommendation of the science; and observations on anti-phrenological opinions, the list of which Mr. W. postpones "in pity to their authors." The two lists of testimonials originated in the following circumstances:—Sir George Stewart Mackenzie, Bart., having addressed a letter to Lord Glenelg, as Secretary of State for the Colonies, representing that great advantages could be derived from the use of Phrenology in classifying convicts, and soliciting a practical trial of the skill of phrenologists in predicating disposition from configuration of head; but his lordship declined the proposal, on the grounds of his having no funds (*which were not desired*), and no faith in the science. Nearly at the same time, the professorship of logic, in the University of Edinburgh, became vacant, and Mr. Combe forthwith offered himself as a candidate for the appointment. The certificates and testimonials in support of Sir George's proposal and Mr. Combe's solicitation, were published simultaneously; and, in Mr. W.'s opinion, they contain such a weight of personal evidence as must have greatly astonished the opponents of Phrenology.

SECTION V. is composed of statistical estimates and summaries, relating to phrenological societies, works, authors, essayists, museums and lectures. According to Mr. W.'s computation in aggregate numbers, there are twenty-four British Phrenological Societies now in existence, nearly one hundred writers on Phrenology, and one hundred thousand believers in the principles of that science. His Supplement is brief, and comprehends additional miscellaneous information obtained after his work was in the hands of the printer. From this view of his Sections, it may be inferred that Mr. W.'s

volume is calculated to afford much curious literary and philosophic entertainment.

Mr. Watson disclaims all intention of having written his *Statistics* for the purpose of teaching Phrenology ; but it appears to him advisable to introduce a brief sketch, at p. 50, of what the science now professes to be, if regarded as a branch of philosophy. According to him, Phrenology signifies the science of mind in connexion with the body ; and, in this limited acceptation, it differs from metaphysics, which, as a term, has long been held to have the same signification. The former combines metaphysical reasoning with physical observation ; but, he says, a considerable amount of knowledge on the subject, may be attained by the simple observation of physical facts viewed in conjunction with the actions of animated beings. In metaphysical reasoning, mind is discussing the workings and qualities of mind : hence, all expositions of Phrenology, into which such reasoning is introduced, are tinted with the peculiar hues of the mind whence they proceed : allowance, therefore, should always be made for this by readers who, and writers as well, are apt to mistake their own individual peculiarities for general rules or truths. Phrenologists do not inquire into the nature of mind : they limit themselves to observing the manner or laws of its communication with the external world. Some of them state that we cannot know the nature of mind : but, in Mr. W.'s opinion, this statement is true only in part ; for, he adds, we may know the nature of mind just as much as we know the nature of other things, analogically, not absolutely. Let him tell us, when and how this knowledge will be attained by man.

Mr. Watson says, that, under the general term of mind or mental manifestations, are included the instincts, feelings, and intellectual capacities of animals—brutes as well as human beings ; and, that these instincts, feelings, and intellectual capacities are called faculties of the mind. Some persons regard mind as a single and independent existence, and consider the faculties to be either states of mind or else the powers with which it is endowed. Others look upon mind as nothing more than an aggregate or united whole, composed of the different faculties ; much in the same way that body is a whole composed of many different parts, such as the brain, nerves, muscles, bones, vessels, liver, lungs, stomach and other internal organs. In the former view, according to Mr. W., mind becomes almost synonymous with soul ;* but he cannot admit their identity, because this would drive him to allow the existence of a soul in brutes, since they are unquestionably endowed with mental faculties and perform mental actions. If the latter view be correct,

* As a distinctive term, *soul* might be employed to designate that endowment of mind which is peculiarly human, and destined for a state of immortality : it consists of those moral sentiments and intellectual powers which are proper to man ; and, what is remarkable, the cerebral convolutions, discovered by phrenologists to be the organs of these faculties, are entirely wanting in the lower animals, even the most docile.

men and brutes resemble each other in their minds almost as closely as they do in the structure of their bodies, and soul must be held utterly distinct from, and dissimilar to, mind.

Now, he continues, neither of these opinions appears to admit of full demonstration : whichever is adopted as affording the better explanation of observed phenomena, the *connexion* between mind and body is still left a distinct and unsettled question. Respecting this question, two widely different views have prevailed : the one regards mind as a being or essence connected with the body, though capable of having a distinct existence ; and, in this view, mind is said to *use* the material organs composing the body as so many instruments for fulfilling its wishes or commands. The other view considers mind as having no distinct existence, but as being the mere condition or manifestation of functional activity in the brain, and therefore inseparable from it. In the same manner, says Mr. W. (and he might have said more), sensation may be called a condition or manifestation of functional activity in the nerves, and motion may be said to bear the same relation to the muscles. We are further informed, that neither phrenologists nor others, taken collectively, adopt any of the preceding views ; they are always individual opinions. There are phrenologists who regard mind as a mere aggregate of faculties ; which faculties are the functions, or proceed from the functional activity, of the brain : and there are many other phrenologists who believe mind* to be a distinct and individual existence communicating with the material world through the medium of the brain and nerves, as so many instruments for manifestation. The same diversity of opinion exists among those who have not studied Phrenology ; and consequently, in Mr. W.'s judgment, the preceding definitions are to be taken as metaphysical and opinionative, and such as can in no wise interfere with the observed facts of his favourite science. Nevertheless, he concludes, it is a very important point to determine whether the mind is, or merely has, the faculties, and whether it is a *being* or a *function*.

Phrenologists are quite agreed that all *manifestations* of mind directly depend upon the brain ; and this whether the brain be regarded as the origin or the instrument of mind : hence the *brain* is said to be the *organ* of mind, and the *manifestation* of mind to be the *function* of the brain. This, we are told, is the *first* principle of Phrenology, according to the usual acceptation of their science by phrenologists : but it is a proposition not at all peculiar to them, for

* Man is a three-fold being, composed of body, life, and mind. Without life the body would be inert matter devoid of sensation and nutrition, and mind could not be known to exist ; and without mind the living body would be a mere vegetating formation, incapable of perceiving, thinking, willing, or moving, and, at the same time, undesirous of immortality. Now, all this being true, mind evidently is a distinct active essence, co-existent, co-relative, and co-efficient with the body ; and, as is the case with light and heat, its existence is discernible by man only in the results of its actions and their manifestations.

it is received as an established principle, by almost all physiologists. That the faculties of the mind are *manifested* by different parts of the brain, and that each particular faculty depends for its *manifestation* upon its own particular part of the brain, constitutes the *second* proposition of Phrenology. As the whole brain is called the organ of the mind, so the particular parts of the brain are called the organs of particular faculties of the mind. Several distinguished physiologists still dispute this division of the brain into distinct organs; but it is Mr. W.'s belief, that there is evidently an increasing tendency to admit its accuracy. The *third* phrenological proposition is, that, when health and other circumstances are alike, the faculties are powerful or feeble in *manifestation* according to the sizes of their organs—*size* being one measure of functional *power*. Some few physiologists yet refuse to recognize this doctrine: but a close correspondence between *size* of organ and *power* of functional *manifestation* being found to pervade the whole organic frame, analogy decidedly supports the phrenologists and those other physiologists who agree with them in regarding this to be a law of Nature—a rule, says Mr. W., without exception.

Phrenologists consider these three fundamental principles as fully proved by a multitude of facts, and confirmed by manifold analogies. It is a well-known fact, that the heads of brutes differ much from the heads of men, and similar differences of shape or proportions exist, also, in their brains. Such differences, however, are observed, not only between the different species of animals, but also between individuals of the same species or race: thus, the forehead and fore part of the brain are always proportionally smaller in the brute creation, than they are in human beings; and, amongst men, some have the greatest bulk of brain in the front, and others have it in the back part of the head.

From the fact, that the power of manifesting each particular faculty corresponds with the size of the particular part of the brain constituting the organ of that faculty, it must follow that the differently proportioned brains are attended with corresponding differences in the power of manifesting the faculties. While reason infers this position, Mr. W. avers it is also proved by thousands of observed facts. Hence it is, likewise, that different dispositions and talents are exhibited by animals and by individuals having differently proportioned brains; and this explains the curious circumstance—which remained inexplicable previously to Gall's discoveries, that the talents and dispositions of individuals differ widely, even from earliest childhood—why one child evinces a decided talent for music, but is a dunce in learning languages, while a second is a capital linguist, yet has no talent for drawing or music; why one is rough, and another is gentle; and why character is as diversified as the form of the head.

Now, seeing these differences of disposition and talent depend, *for their manifestation*, on the size or proportions of the different parts of the brain, we obtain an easy key to the real dispositions

and talents of individuals, *provided we can ascertain the shape of the brain during life*. On examination, Mr. W. tells his readers, we find that there is a very close resemblance between the shape of the brain and that of the skull, in human beings; and, that the skull itself corresponds in shape with the outside of the head: consequently, there is little difficulty in estimating the shape or proportions of the brain, in living heads. Between the brain and the external shape of the head, however, the correspondence is not quite perfect, and therefore there is *some* difficulty in the way of correctly ascertaining the natural dispositions and talents of individuals by looking at the external shapes of their heads. For this reason, it behoves phrenologists to make themselves acquainted with the parts of the head where such differences usually occur, and also with their usual extent; and, possessed of this knowledge, they can easily make the requisite allowances when looking upon a living head: serious mistakes will seldom occur, excepting with respect to that portion of the brain which is situated behind the lower part of the forehead.* Phrenologists estimate the size of organs by examining the proportions or comparative size of different parts of the skull or head, as representing those of the brain which constitute the organs of the different mental faculties: and, in their language, cerebral development signifies the absolute or comparative size of the brain and its parts. Development differs more or less in every individual head; and, in extreme cases, the differences amount to inches, so as to be readily discovered; but, in many instances, it is difficult to say which of any two organs is the larger. By careful observation of extreme cases, the functional manifestations of faculties and their organs have been ascertained, and the cases of more equal development corroborate and explain the primary conclusions. Thus, Mr. W. affirms, the mental faculties absolutely depend upon material organs for their manifestation; and, like all other textures of our frames, these organs do not admit of entire change at will: hence, dispositions and talents are innate and will defy all attempts at change, excepting within the limits allowed in the material organs by which they are manifested.

Mr. Watson goes on to say that, besides the differences resulting from the size of the brain and the proportions of its parts, the natural dispositions and talents of men seem to be greatly influenced by the quality of the brain, and probably by that of the whole frame. There are no fixed rules for judging of the quality of the brain, he thinks; but it is supposed to be indicated by certain empirical signs. This doctrine seems somewhat singular in coming from a medical philosopher and a phrenologist: the qualities both of brain and of body may be ascertained by the self-same rules which enable us to judge of the qualities of medicines and the qualities of organic functions; namely, by attention to the relations of concomitance and causation. Mr. W. regards the comparative or proportionate de-

* See *Analyst*, vol. iii., p. 43.

velopment of the different parts of the frame, elementary constituents as well as compound organs, as the most probable cause of temperament or constitution.

The temporary state of the brain and body materially modifies the manifestations of the mental faculties, particularly when the size of their organs is nearly balanced. It is stated further by Mr. W., that the exercise of the faculties increases the functional activity of their organs: it improves their power and energy, but it does not otherwise change them. On the other hand, when the faculties are too little exercised, their organs become weaker: but when they are too much exercised, their organs become irritable and unhealthy, and the constitution of the whole body is then injured by the unhealthy state of the brain. Precocious children usually die in childhood, or lose their talents through being encouraged to overstrain their brains; and, through being forced to do so, dull children are often seriously injured. Again; the organs are stimulated into activity by external circumstances; but often they become involuntarily active from an internal cause—as an increased flow of blood to the part. This, as Mr. W. observes, is an important fact, which ought to be well known and ever remembered by moralists, divines, parents, teachers, and physicians. He thinks it probable that exercise or activity of the cerebral organs increases their size; but whether it does this to the extent of altering the original configuration of the skull, after puberty, seems yet very doubtful. He is quite certain, however, that particular forms and qualities of brain are hereditary; and, although the laws of hereditary descent are unascertained, yet there is a presumption that the organs predominantly active in the parents, will be the most developed in their children. And this much we give to afford a glimpse of the “philosophy of Phrenology.”

Mr. Watson seems to have taken extraordinary pains to make his *Statistics of Phrenology* alike comprehensive and accurate. When under the influence of particular inspirations, he is sometimes amusingly oracular; but, throughout the work, his talents and principles appear to great advantage; while his literary character is beautifully distinguished by a vigorous straight-forwardness of purpose, and a devoted veneration of philanthropy and truth.

Anecdotes and Annals of the Deaf and Dumb. By Charles Edward Herbert Orpen, M.D., Member of various British and Foreign Societies, and Secretary of the Institution for the Deaf and Dumb, at Claremont, near Dublin. Second edition. London: Tims. 1836. Post 8vo., pp. 626.

IF establishing schools and colleges for the instruction of ordinary children is of such importance, and the necessity of arriving at the best and surest means of enlightening them and rendering them fit to mingle in polite society, as is now universally acknowledged, so

indispensable, how infinitely more incumbent is it upon us to provide institutions for the education of those of our fellow-creatures whose unhappy lot it is to be deprived of the powers of hearing and speaking. When we consider that in Britain alone there are at this time many thousands of deaf and dumb persons; when we remember that, perhaps, one tenth of these are uninstructed, and consequently wholly ignorant of the existence of the Deity and of a future state, shall we imagine it an affair of no moment to draw these wretched beings from the brutal state in which they must otherwise live and die! But the fact is, that few persons ever bestow a thought on these their unfortunate fellow-creatures; and, being unaware of the frequency of the malady, do not reflect on the evils necessarily consequent thereon, without the lights of education. In Ireland, the deaf and dumb population amounts to four thousand, and only one hundred and twenty of these are educated. What then can become of the immense majority that must be as the beasts of the field! The misery caused by the mere abstraction of the powers of hearing and speaking is comparatively of slight importance, when contrasted with the utterly uncultivated condition of the deaf and dumb. Having never enjoyed the pleasures of conversation, this may not be felt by them so great a privation as it naturally appears to be to us; but how awful and terrific is the idea that they will first become aware of the existence of God when they shall be summoned at the last day to appear before his judgment seat, whence there shall be no appeal. When all these matters are taken into consideration, it is surely not too much to say that it is the *duty* of every one, according to his ability, to give substantial evidence of his willingness to aid the benevolent institutions established in various parts of Europe and America for the education of the deaf and dumb. Let those who yearly spend their thousands and tens of thousands on racing, gambling, and other vicious and demoralising sports—to which too many are driven solely from the want of some rational employment, and with the view of killing time—follow the bright example of the Abbés de L'Épée and Siccard, and turn their attention to the education of the deaf and dumb, or at least provide schools and instructors for the purpose. Then, indeed, they will be “useful in their day and generation;” and when their mortal body shall be shrouded in the cold clay, their memories will still be cherished and revered by succeeding generations, when ages shall have passed over their tombs, and when, but for this true patriotism, their names would long since have passed into oblivion, unremembered and unregretted. We have given our readers some idea of the frequency of this distressing calamity; we have mentioned the exceedingly small number of those which receive instruction; and we have alluded to the expediency and necessity of adopting some means of alleviating their misery: we shall now proceed to shew the awful effects which may be, and frequently are, the result of leaving the deaf and dumb, but more especially females,

uneducated. For this purpose, we shall extract an anecdote related by Dr. Orpen, which we do with the more satisfaction, as the lady who communicated it wished it to be made as public as possible.

"When Miss — resided with her brother, in the Parish of —, (of which he was rector), they had a neighbour, a gentleman of handsome fortune, whose eldest child, and only daughter, was deaf and dumb. Miss — used every argument with this gentleman that humanity, parental feeling, or christianity could dictate, to send his daughter to London, to the person who taught Lady —'s daughter, that she might be taught to read and write, as the only means of making herself acquainted with God,* or Christ, or moral duty, or a hope of immortality; adding, that if he did not do so, it required no spirit of prophecy to foretell the dangers that must surround her when she grew up. The father replied, that it was sufficient punishment for him to have to feed and clothe a creature who could never be of any credit or comfort to him, and whom he could not look to seeing genteelly married, without incurring further expense for her; and that he considered she would be a heavy burden on him and on his sons after him; vowing that he would never do more than feed and give her covering; always ending the argument by wishing her dead. This girl, even when a child, was uncommonly beautiful, engaging in her manners, most obliging and affectionate, and highly grateful for any little attention shown her; and, notwithstanding her father's severity, was endeavouring, by each little endearment in her power, to win his love; but he continued to hate the sight of her, calling her his curse. As her mind was an uncultivated waste, she could not endure to be alone; and naturally seeking for some social circle, she turned from the frowns she received in the parlour, to the smiles and kindness with which the servants always treated her in the kitchen, where her efforts to assist them and relieve their trouble, her ingenuity in making herself understood, and her readiness to acquire all that they could teach her, combined with her sweet temper, gained her the utmost compassion and kindness that they had the power or the liberty of bestowing. Each servant, however, was laid under a strict injunction to prevent her being seen by any person who visited at the house, and, also, not to tell any one that there was such a being in existence. The constant repulses and unkindness of her father, at last forced her to make the kitchen her home. Miss —, whom she loved so much, continued to visit her, and to exhort the servants to be fond of her, and careful of one who, under the awful privations of speech, hearing, language, society, education, and revelation, was ignorant of God, and consequently had not the consolation of religion to support her under her father's cruelty, and who had been bereaved of a mother's tenderness and care at three years of age. This young lady grew up a lovely, graceful, interesting girl to her seventeenth year, when her father discovered that she was with child, and flogged her severely. He then summoned up the butler, footman, coachman, and gardener; and with threats and imprecations that he would have the life of the man who had brought this disgrace upon him and on his sons, compelled each of them to take an oath declaring their innocence respecting the young lady's situation. From this period, she was more strictly concealed than ever, and her father affected to pity her; but so unconscious was she that sin or shame was attachable to her state, that she would sometimes make a doll, like a baby, with her kerchief, and kiss, caress, and clasp it to her bosom; and then signify, with a joyful countenance, that she was looking forward to the delight of fondling and nursing a living baby. It was observed that, from the time she became very large, her father staid within doors; and one morning, on finding herself extremely ill, she naturally went to her only parent, her father, and clasping him in her

* It must be evident to every one who reflects on the matter at all, that the uninstructed deaf and dumb have no idea whatever of the existence of an Almighty Power.—Eds.

arms, gave every indication of excessive suffering. He took her by the hand, led her up to his room, and desiring her to go to bed, instantly left her, and, locking the door, seated himself outside it. The poor creature, terrified at finding herself locked in, with no one to pity or assist her, thundered at the door and screamed so violently to get out, that the four men-servants and four women-servants, rushed up stairs; but their prayers and tears, that some one might be admitted or called to her relief were all in vain: her father denounced instant vengeance against any one who should approach. Her groans were echoed by the useless sympathy of the servants outside the room. At length her cries became fainter and fainter, till, at the end of two hours, they ceased entirely. A pause ensued: her father then rose, and admitting the servants, gave them the key and went down stairs. On unlocking the door of the chamber, they found the poor young woman lying on the floor, quite dead, and a fine infant boy lying beside her, dead also. With one voice, they exclaimed, that had she been taught to read and to understand the Scriptures, she never would have been in this state; but no one ever warned her that she ought not to be a mother and unmarried."

Nor is this a solitary instance of the evil resulting from leaving the deaf and dumb to the course of Nature. Dr. Orpen's *Annals and Anecdotes* abounds with cases in which the worst of consequences ensued, as might indeed be expected. But the above extract is sufficient to point out the necessity of educating these unfortunates. It appears, from the Doctor's evidence, that at every vacancy which occurs in the institution to which he is Secretary, there are fifty or more applicants for admission; numbers of these have been candidates for years and years; and as pupils are not allowed to enter after a certain age, hundreds must pass the time of life when it would be possible to educate them, without relief: and until the funds of the various schools shall be considerably augmented, this must necessarily be the case.

Having thus given our readers some faint idea of the state of the uneducated deaf and dumb and their prospects, let us now investigate the manner in which Dr. Charles Orpen has fulfilled his task. The author is founder of the Deaf and Dumb Institution at Claremont, Glasnevin, near Dublin; and all the time and money which he could spare, seem to have been dedicated to this truly useful and benevolent purpose. His book consists of a collection of anecdotes concerning the deaf and dumb, and the correspondence of the pupils in various schools, intermingled with original observations of his own. These latter at once prove the talent, judgment, and enthusiasm of the author in his subject. The style is pathetic, occasionally eloquent, and in every case admirably adapted to the topic under discussion. A decided spirit of piety pervades the whole volume, and this spirit is, in general, not carried too far. It appears, however, to be the settled opinion of Dr. Orpen, and likewise of the instructed deaf and dumb at the Claremont school, that their hapless lot is to be considered a "dispensation of Providence"—a most erroneous and pernicious doctrine, and one which cannot be too much deprecated. Dr. Orpen must be well aware (although he has nowhere alluded to the circumstance), that deafness—in common with all other deformities—is the result of an infringement of one or

more of the physical laws on the part of the parents ; that this is the case, has been well shown by Dr. Combe, and is in a manner proved by the frequent cases in which a number of deaf-mute children are born to the same parents. The omitting all notice of this fact is, we conceive, one of the weak points about Dr. Orpen's book. We had hoped, on opening his work, that he would have come to some definite conclusion respecting the most frequent causes of the disease, which his profession would have given him abundant opportunity to have ascertained. This is a most important subject ; because, supposing the cause to be discovered, it would surely be better to prevent, as far as possible, the occurrence of such evils, than even to educate the deaf and dumb already existing. For although it is perhaps not in the power of mortal man ever entirely to eradicate the disease, very much might doubtless be effected amongst the poor by the physician and the country gentleman, each watching over the welfare of his own parish. However, as the deaf and dumb population does at present form so large a proportion of our nation, Dr. Orpen's book will be of inconceivable service ; first, in pointing out the misery of the uneducated deaf and dumb ; and secondly, in mentioning the means of remedying these evils. His *Annals* will awaken a lively interest in the cause of these persons, in the breasts of thousands who had before scarcely known the existence of such individuals, and will conquer the aversion expressed by many to their being instructed at all, and likewise to the methods of instruction now adopted. It has been urged that religion is not taught in these schools ; but let any one, holding such an opinion, cast his eyes over the numerous letters of pupils who have been in these seminaries, and see if he is not most grievously mistaken. Indeed every thing else appears to be kept subordinate to this first and most important subject ; and it may truly be said, that " God is in all their thoughts." The next thing with which we must find fault in Dr. Orpen's volume is, that Phrenology is not so much as once alluded to ; if this science be of such paramount importance in the education of ordinary children, how much more so must it be in that of the deaf and dumb, whose real characters it must take years to determine ? and without an intimate knowledge of the character of each child, how can success be expected in the end at which we aim ? But we must forbear, and will conclude this too brief notice of one of the most interesting and best-written books which ever came under our notice, by expressing a sincere wish that the lights of phrenological science will not long remain banished from these institutions, and that the time may come when every school-master is a phrenologist. We earnestly request each of our readers to give Dr. Orpen's book an attentive perusal, and if he fails in receiving from it the instruction and satisfaction that we have ourselves experienced we are greatly mistaken. The first edition was printed in 1828, " by T. Collins, the first pupil of the Deaf and Dumb Institution, in the printing office of his master, M. Goodwin, 29, Denmark-street," Dublin. It was aptly entitled *The Contrast*

between Atheism and Christianity Illustrated ; or the Uneducated Deaf and Dumb as Heathens, compared with those who have been Instructed in Language and Revelation. The second edition is dedicated to John Mortlock, Esq., of Brighton, at whose desire and charge it was undertaken.

An Essay on the Nature, the End, and the Means of Imitation in the Fine Arts, translated from the French of M. Quatremère de Quincy, by J. C. Kent, London: Smith, Elder, & Co. 1836.

THIS is a work of considerable merit, and should be in the hands of every artist who aspires to a higher knowledge of his art than consists in the mere manual skill. Art is a study, not mere handicraft. The great masters, whose works are the exemplars of future generations, were not content to imitate even each other ; but out of every model erected an original character. The pencil was merely the transit to their thoughts, and the hand subservient to their ideas. The executive power was forgotten in that of the creative. Copyism is the bane of improvement : he who is content to be a slave to the models of others may make a living, but he will never make an artist. The disadvantages of a beginner are scarcely surmountable ; with a young artist who, from indigence, is compelled to make his profession *too early* a means of subsistence, the greatest evil with which he has to contend arises out of the ignorance and self-conceit of his sitters. The general demand is for a likeness—a “*speaking likeness*”—to produce which the artist must descend to the lowest faculty of his art—that of mere imitative skill—which not only represses the ardour and retards the improvement of his mind, but is even fatal to his success ; for a “*speaking likeness*” must always be an unpleasing one : but to perpetuate that very familiarity of expression which is assumed in general society, is degrading to one who is naturally susceptible of a more noble and exalted bearing. Compare a “*speaking likeness*” with the features at such a time, and though the resemblance be the same, the identity is lost.

The artist should resemble, but not copy. He should be a profound phrenologist and physiognomist, an acute observer, a reader of the thoughts and intents of the heart, and by forming a ready discovery of the ruling passion, and invest his portraitures with that look which indicates their highest susceptibilities. In this power lies the *ideal*—to represent human nature in its best and most dignified apparition—to give importance to commonplace, and something beyond form to beauty—to paint the face as it can look when influenced by the most elevated feelings—painting what we should and could be, rather than what we are. Thus we should exalt the art, ennoble the artist, and become possessed of a likeness which we should be meliorated by contemplating.

An artist has much to struggle with ; and though the means of his improvement are not always attainable, the one great object—

that of the theory of his art—should be unceasingly studied. This work of De Quincy, so admirably translated by Kent, is a valuable acquisition to his means; it is full of profound thoughts and practical observations.

On the Natural History and Classification of Birds. By William Swainson, Esq., A.C.G. Vol. I., 12mo., London: Longman & Co. 1836.

WE have often heard it contested, with some show of plausibility on each side, whether the labours of the field or the closet-naturalist were the more important of the two. Now, it appears to us, the question is one of no importance, as it must be obvious to those who are disposed to view the matter impartially, that, whatever may be the respective powers of the mind requisite for each department, both are alike essential to the advancement of the science. That the two may be advantageously united in the same individual is, moreover, satisfactorily proved by the original observations on the habits of the feathered race which the author of the present treatise has occasionally introduced; one or two of which we shall extract as specimens. His scientific knowledge and acumen are too well known to require any comment from us. We shall now proceed from these generalities to a brief notice of the contents of this book, which forms the eighty-third volume of Lardner's *Cyclopaedia*.

The first chapter contains some general observations on birds—on the peculiarities of the class—its relation to reptiles and quadrupeds—and its primary divisions. The following remarks are so excellent, and the subject of them has been so frequently misunderstood, that we shall extract them for the benefit of our readers.

“The first, or pre-eminent type, is termed the *Insectorial*, or typical, because it corresponds to the order *Insectores*, the most perfect in this class. We use the term *perfect*, on this and all other occasions, not as implying that other groups—when compared to such as are thus termed—are imperfectly formed, but indicative only of a higher or more complicated organization. Nothing that the Universal Creator has made can, by any possibility, be imperfect, in the usual meaning of the word; because, as one of His attributes is *perfection*, it of course follows that all His works are equally so; that is, they are most beautifully and most completely formed for the station in the scale of nature they are intended to fill, and for performing the functions belonging to their particular organization. But while this truth is apparent to all who wish to know it, there cannot be a doubt that some animals have their instincts more developed, and their forms more highly organized than others. A bee is a more perfect animal than a butterfly, and this latter than an oyster. Why? Because, although each, ‘after its kind,’ is perfection, yet a wonderful degree of instinct has been given to the first, great beauty of form to the second, and both have been denied to the third, which, moreover, is barely capable of voluntary motion.”—p. 8.

The next three chapters are devoted to an explanation of the external anatomy of birds. Although this subject has been treated of in the works of almost every preceding ornithologist, we never

saw it turned to such account, or made to bear so admirably on the natural classification of birds. The whole of Mr. Swainson's pages evidently bear the stamp of originality, and the observations contained in this section of his book should be attentively perused by the student. Indeed, such is the novelty of the light that our author has shed on this topic, that even the most experienced ornithologist will be considerably benefitted by a knowledge of them, and will feel surprised that the external anatomy of birds had not before been investigated with the attention it deserves. The following quotation from one of the chapters on this subject will give our readers a favourable idea of Mr. Swainson's observations on the habits of birds.

"A great deal has been written, and now rendered familiar to every one by our cheap compilations, on the powers of sight in the Falconine tribes; but those of the Swallow seem to have been quite overlooked. It is, nevertheless, difficult to say which is the most astounding, the far-sightedness of the former, or the instantaneous and complicated discernment of the latter. The Swallow is proverbially the swiftest flier in the feathered creation; and yet, in the full career of its course, it is entirely intent upon quite another object than that of flight. While darting through the air at the rate of three miles a minute, it is looking on the right hand and on the left, sideways, upwards, and downwards, for its food. The insects it preys upon are often exceedingly minute—sometimes flying above or below the level of the Swallow's flight; and yet they are seen, captured, and swallowed, without any diminution of the prodigious rate at which the bird is flying; nay, more, any one who attentively watches the Swallow skimming over a meadow in summer will perceive that it will capture two, or even three, insects in such quick succession as to convince us the bird must have had them in his eye, to use a colloquial expression, all at once, and that the whole are caught and swallowed in as many moments. The faculty of vision, in short, in these birds is fully as much developed as in the Falcons, although in a very different way; the one being *long* and the other *quick-sighted*, and both to a degree perfectly unexampled in the animal creation."—p. 46.

The next topic discussed is the song of birds; our limits will not permit an analysis of this section, but we may mention that we think the cause assigned by our author for giving such a peculiarity of voice to birds is the real one.

Proceeding onwards, we find a general survey of the nidification of birds, which Mr. Swainson, as usual, turns to good account as regards classification; but we marvel greatly that the interesting subject of oology should have been so completely overlooked. In many cases the eggs form a good index to the natural affinities of birds, as has been observed by Linneus, Lewin, Hewitson, and others; though implicit reliance cannot, of course, be placed on such a basis. Whilst on the subject of nests, it may be as well to correct our author's notion that the Fieldfare Thrush does not breed in companies, which has been proved to be the case by the observations of Mr. Hewitson.

Part II. is devoted to the bibliography, nomenclature, and preservation of birds, a chapter being occupied with each of these heads. In the first the reader is informed which are the most valu-

able works treating of the birds of various countries, with critical remarks on each. Nuttall's work on North American birds is stated not to be procurable in Britain. We have, however, found no difficulty in obtaining it through the usual channels, and can safely recommend it to the notice of those who are unwilling to purchase more costly books. The treatise on nomenclature contains many sound remarks and rules, especially on naming natural objects after individuals; but the observations on English nomenclature form, in our opinion, the weakest point of the volume. The arguments brought forth in opposition to reforms in vernacular names will, probably, prevent many from adopting such alterations; and, therefore, for the benefit of those who are disposed to rely implicitly on the authority of a great name, we propose, in our next number, to devote an article to the refutation of our author's views.—In the chapter on the preservation of birds, the new method of arranging the skins in drawers, instead of setting them up in glass cases, is advocated. The whole of the author's extensive collection is thus arranged; and, having ourselves examined his cabinets, we can answer for the expediency of the plan.

The third and last part contains an elucidation of the two first orders of birds, *Raptores* and *Insessores*, the classification being the quinary system, so successfully advocated by many of our first zoologists.

The whole volume is written in the lucid and masterly style ever observable in the works of Mr. Swainson; it is both scientific and popular; it forms by far the best introduction to general Ornithology with which we are acquainted; and if the student of the feathered tribes fails to possess himself of the present *Treatise*, the loss will be greater to himself than to any one else.

Civilization; or a Brief Analysis of the Natural Laws that regulate the Numbers and Condition of Mankind. By the Hon. A. H. Moreton, M. P. pp. 216, 8vo. London. 1836.

MR. MORETON introduces his *Brief Analysis* with the observations, that there is a broad line of demarcation between mankind and the rest of the animal kingdom, in the substitution of reason for instinct. Man requires a long and careful education to enable him even to exist; while, in their natural state, it does nothing for the inferior creatures, which are endowed by Nature with all the faculties required for their subsistence. Brutes, as soon as they have acquired sufficient strength, begin to seek their food in the same manner as the rest of their species: the experience of a hundred generations adds not to their knowledge. The original helplessness of man, as an *individual*, with his subsequent acquired superiority, and his original weakness as a *race*, with his subsequent knowledge and power, distinguish him from the "beasts that perish:" from age to age, and from year to year, he continues acquiring fresh knowledge, fresh enjoyments, and fresh power.

An inquiry into the general nature of the alterations, gradually and constantly taking place in mankind, as a *race*, constitutes the exclusive subject of Mr. Moreton's volume; and his chief theme is sub-divided into distinct investigations—on wages, industry, and on combinations to raise or lower wages—on the origin and limits of the fund for the employment of labour—on the effect of civilization upon the health, longevity and increase of mankind—how the amount of population is adapted to the variations in the fund for their support—case in which population has no tendency to increase—and on the causes that may obstruct the growth of the manufacturing and higher classes. These questions necessarily involve the highest interests of persons, families, and states: on this account, therefore, their principles and ultimate bearings upon the conditions of society, merit always and every where the most deliberate consideration of legislators and philosophers. Mr. Moreton has conducted his inquiry into these important and difficult propositions with exemplary moderation; his pages are altogether free from the vulgar and indecent vice of imputing ignorance and dulness, or bad motives to those who may not be able to coincide with one's own favourite opinions, although, perchance, these themselves may be little other than mere prejudices or visionary predilections. Mr. M.'s views are clearly stated, candidly discussed, and modestly advocated.

Magazine of Zoology and Botany. Conducted by Sir W. Jardine, Bart., P. J. Selby, Esq., and Dr. Johnston. Nos. III. and IV. Edinburgh: W. H. Lizars—London: Highley.

WE rejoice to see so many periodicals in circulation with the view of promoting the cultivation of Natural History, as it proves incontestibly that there is an increasing demand for such works, which must necessarily tend still further to diffuse a taste for the science. *The Magazine of Zoology and Botany* is the most strictly scientific Magazine of Natural History of the day; its papers interest exclusively the professed naturalist; and hence its usefulness will consist rather in advancing than diffusing natural knowledge. We cannot here give an analysis of the contents, but may instance the leading article in the third number, on the Cuckoo family (*Cuculidæ*), by Mr. Swainson, as being especially worthy of attention. The reviews are, in general, impartial and able. The 3rd number is adorned with a steel engraving, representing the intestinal canal of *Buteo vulgaris*, and the 4th number contains four plates, one to illustrate an article on "Some new Species of Exotic Coleopterous Insects," by J. O. Westwood, and three to elucidate an elaborate paper on "the Natural History of the British Entomotraca," by William Baird. We wish the work every success, and hope the succeeding numbers will be at least equal to those already published.

A Popular View of the Progress of Philosophy among the Ancients.
By J. Toulmin Smith. London: Longman and Co. pp. 454.

WE report, with much satisfaction, on a work recently published by Mr. Joshua Toulmin Smith, on *The Progress of Philosophy among the Ancients*. The subject is happy at this juncture, the handling masterly, and the inferences of incomparable utility to the present extended society of letters. The author takes a succinct view of the theologic and moral philosophies of the several nations of antiquity; thus embodying in our vernacular tongue, theories hitherto wrapt in the mysteries of obsolete and, to most readers, inaccessible dialects; laying bare the barrenness of metaphysics, venerable only by wordy nullities, and directing research to those truths meriting the admiration of the initiated.

It is amusing to observe how Mr. Smith has disengaged an identical theologic inference from the discordances of barbaric systems. The author has succeeded in an arduous attempt—he has transferred the science of antiquity from the schools to the people, who are hereby enabled to place in antithesis the value of the ancient and modern philosophies—of the imaginative and metaphysical method of the former, and of the physical and practical manner of the latter. If we might direct attention to any part of the work, as meriting especial regard, and as opening a fund of information not generally diffused, it would be to that which treats on the philosophy of the elect people of God under the Mosaic dispensation.

The style is characterized at once by simplicity, brevity, and perspicuity; and we would with confidence augur that this volume will become a popular manual of those curious in the dogmas, and incompetent in the languages of the barbaric, sacred, and classic philosophies.

The Irresistible Influence of Early Impressions on the Mind of Man. By C. V. Whitwell. London: Whittaker & Co. 1836.

THE public may wonder why we devote a page to the consideration of a mere pamphlet; but it is not only the very talented address of Miss Whitwell which we examine, but especially the importance of the subject of which it treats. Truth, in its nature, is homogeneous and consistent, and, however faint the emanation, it is identified with its source. There are few whose experience has not taught them some of those truths which are incidental to suffering, but which are too loose and unconnected to apply and profit by. It is the privilege of few to appreciate these scattered facts, and, by a logical comparing reason, collect, arrange, and apply them to the common necessities of mankind. This pamphlet is one of the conservatories of truth; if it contain nothing new, it illuminates what was before obscure, and directs the mind to a higher and better nature. Let not our readers suppose that Miss Whitwell has lately or suddenly seized upon her theory, or that she is a mere

assenter to the modern doctrine of the physico-spiritualist. The authoress has arrived at truths so important only by many years of thoughtful application. Truth is not communicable or receivable at *once*, but arises slowly in the mind by the collision of its own thoughts.

Miss Whitwell has had much to contend with in the promulgation of her opinions. That truth is not always victorious over prejudices and pre-educated susceptibility, a thousand precedents will confirm. How patient, how confident, how consistent, Miss Whitwell has been as a public teacher of truth, is known only to a few.

The laborious productions on education of De Stael, Montague, Edgeworth, and Barbauld, receive universal commendation, because the plan in each is only a modification of what preceded it; but to teach children to be what Nature has organized them for, to persuade instead of to compel, and to institute a penalty without the consequence of stubbornness and hatred, is a process unsuited to the comprehension of those who fancy, by a vain appeal to themselves, that a thousand varied instruments can sound the same note, and that, as extremes meet, they can cure one evil by the counter-irritation of another, and between *shame* and the birch train up a child in the way he should go. Let parents look to it—let them remember that the sins of the child are reflected back upon the parent with a twofold aggravation. We recommend Miss Whitwell's pamphlet to the serious attention of the public; we wish she had enlarged it into a book, and had laid down the plan she so efficaciously pursues with her own pupils. It contains applicable truths of incalculable worth; it teaches us how best to remedy suffering by anticipating evil, not by vending an empirical catholicon, but by the salutary means of a good moral and physical education, realizing a truth that without a rule has grown into a proverb—the possession of a sound mind in a sound body. Miss Whitwell has not said enough, she has hinted more than confirmed, but the fault arises from the limited extent of the address. The style of this pamphlet is perspicuous and accurate, and the instances are such as belong to all periods of history. We think illustrations from modern times would have been better, but as we hear Miss Whitwell is engaged on a most admirable work on this subject, we refrain from all further remarks.

If there were half a dozen Howards for infants who, by joining in a sort of Joint Stock Company for the education of children up to a certain age, with all the advantages of situation, with gardens, and everything to teach rather by God than man, by example than precept, independently of the pecuniary interest, the moral premium would be incalculable. To supply a ruling and governing spirit imbued with gentleness and truth might be a desideratum. Let them read this pamphlet, and then decide on the choice.

Selections from the Phrenological Journal; comprising Forty Articles in the first 5 vols. of that periodical; chiefly by George Combe, James Simpson, and Dr. Andrew Combe. Edited by Robert Cox. pp. 360, sm. 8vo. Edinburgh, London, Glasgow, and Liverpool. 1836.

PHRENOLOGY had made comparatively little progress in this country, and the principles of this new mental philosophy were undergoing an extraordinary opposition, at the time when a Journal was started for the purpose of recording such observations, facts, and inductions, as would tend to establish the truth of these principles, and to illustrate their influence in ameliorating the physical, moral, intellectual, and religious relations of man. The first number of the *Phrenological Journal* was published in Dec. 1823; the 10th vol. is now in progress, and it continues to flourish vigorously, both in importance and usefulness. Entirely free from invective and resentment, untarnished with the withering blights of prejudice and bigotry, its pages are pre-eminently distinguished by a constant manifestation of the best sentiments of our nature—candour, justice, and piety, associated with the generous magnanimity of an enlightened and high-disciplined intelligence.

Mr. Cox, the ingenious and talented editor, has accomplished his self-imposed task with admirable felicity. His Selections are chosen with exemplary prudence and discernment; we refer to his volume, for the evidence which perfectly confirms the judgment pronounced on the merits of the work and its execution. From the scarcity of many of the early numbers of the *Phrenological Journal*, the republication of the choicest papers in a neat and convenient form, will, we sincerely believe, be appreciated as an acceptable and praiseworthy boon by every one who experiences pleasure and discharges a duty in contributing to the diffusion and advance of useful knowledge. The volume contains an almost infinite variety; and from the simple and practical manner in which the majority of the subjects are discussed, it will prove as interesting to the non-phrenologist, as useful to the phrenologist.

The Naturalist's Library. Conducted by Sir William Jardine, Bart. Ornithology, Vol. VI.—*The Parrot Family.* By Prideaux J. Selby, Esq. Edinburgh: W. H. Lizars. 1836.

OFTEN as we have been presented with partial or entire histories of the Parrot family (*Psittacidae*), we never before had the pleasure of examining figures of these splendid birds—in a popular work, and of so small dimensions—half so beautifully and faithfully executed. None of the previous ornithological volumes of this series will in any way bear comparison with that under investigation as regards the execution of the plates. The descriptions of species, too, though necessarily short, are in the usual unexceptionable style ever observable in the writings of Mr. Selby. The affi-

nities of the family are herein traced in a familiar yet scientific and judicious manner, and we are glad to find that, in almost every case, a separate English name has been provided for each genus. The life of Bewick, which opens the volume, is sketchy and pleasing, and on the whole the book is well worthy the names of its editor and author, and will, we doubt not, be perused with pleasure by all classes of readers. The memoir of the celebrated—and, we think, unrivalled—wood-cutter, will, of course, possess peculiar charms for every lover of the feathered race.

The Oriental Annual. Lives of the Mogul Emperors. By the Rev. Hobart Caunter, B.D. With twenty-two Engravings from Drawings by William Daniell, R.A. London: C. Tilt. 1837.

THIS volume is intended to convey to the general reader a better and more detailed account of the Mahommedan history of India, illustrated in the shape of lives of the Mogul Emperors, which appears hitherto to have been but imperfectly known. The aim of the majority of annuals is rather to amuse than to instruct, and in this respect, the *Oriental Annual* heretofore differed in no way from books of a similar nature. In the present volume, however, the desire of the author has been to unite these two objects. Justice compels us to state that Dr. Caunter has succeeded most admirably in his task, and that his readers will find no reason to quarrel with the alterations it has been deemed advisable to effect in this "new series." The engravings, by Daniell, taken from the sketches of Samuel Davis, Esq., are generally as good as the subjects would admit of; but the execution of the greater number of them is too hard, though never stiff. The *Oriental Annual* is exceeded by few of its cotemporaries in practical value, and is calculated to impart much useful knowledge. We may observe that the novelty of this species of publication having nearly worn away, their popularity, too, has considerably diminished; but as the volume before us is excellent in plan and execution, we care little whether it be called an "annual," or whether it be published in a more modest form.

British Annual, and Epitome of the Progress of Science. Edited by Robert D. Thomson, M.D. London: Baillière, Regent Street, 1837. 12mo., pp. 375.

THE *British Annual* professes to be an epitome of the progress of science, and, as the numerous topics are discussed in a concise and popular manner, its use will, we think, be considerable; its value will consist, not so much in giving a good knowledge of any department of science, as in imparting a taste for such subjects, and for diving deeper into them. Adding to this the general accuracy with which the work is compiled, the book cannot be considered otherwise than as a valuable acquisition to science; for though it will not teach directly, it will do so indirectly. Merely to extract

the heads of the various chapters, would occupy considerably more space than we can spare; but suffice it to say, that there is a little of every thing connected with scientific matters, and that a correct though not a deep knowledge of the subjects alluded to, may be gleaned from a survey and perusal of the book. The typography and binding are modest and unobtrusive, but neat.

Phrenology Vindicated: being a Reply to an article in the *Quarterly Review* for September, 1836; with Introductory Observations on the Science in general. By Joshua Toulmin Smith, Esq., of Lincoln's Inn. London: Longman & Co. 1836. 8vo., pp. 80.

NOTHING can be more gratifying to the true phrenologist, or prove more satisfactorily the rapid strides this glorious science is taking, than the number of excellent works on the subject which are continually issuing from the press; and we were much pleased at witnessing the readiness with which the attack on the science, in the *Quarterly Review*, has been refuted. This attack is a review of Combe's *Outlines of Phrenology*, and is, perhaps, the most imbecile attempt of the kind that has ever been made; abounding with inconsistencies and absurdities, of which any tyro in Phrenology would be ashamed. This being the case, it might be imagined to be an easy task to fell the reviewer to the ground: but no such thing. The anti-phrenologists are such marvellous dealers in the ambiguous, and couch their assertions in such a manner that it is often a difficult matter to deal with them. Mr. Smith has, however, faced this champion of anti-phrenology boldly, and acquitted himself exceedingly well. He has adopted the analytic mode, and has picked his antagonist to the bone in each of his assertions. The pamphlet is stated to have been ready for the press in forty-eight hours after the author first received the September number of the *Quarterly Review*. The style is good, the reasoning sound and clever; and if the author has sometimes spoken with more warmth than the occasion might seem to require, we, as phrenologists, can readily understand and excuse his zeal and enthusiasm in so noble a cause.

The Quarterly Journal of Agriculture. Nos. 33 and 34. 1836.

AMONGST the great and constantly increasing number of periodicals, few are more likely to spread practical knowledge amongst farmers than this journal. All the communications inserted are of real worth and interest; and we would more especially draw the attention of our readers to the memoir of Sir John Sinclair contained in these two Nos. There are also some interesting, and we think *original* papers on hedge-birds, by Prof. Rennie; many species are, however, included which cannot properly be termed hedge birds, and other errors are perpetrated which we are unable here to notice.

FINE ARTS.—MUSIC.

VOCAL.

Gresham Prize Composition, Anthem (for 1835),—*My Soul doth magnify the Lord*. Composed by Charles Lucas. London: J. A. Novello.

THE last chorus of this composition gives evidence of considerable power over the resources of art, and of the proper application of those resources: in all that precedes it, we lament to see this power employed in learned trifling and pedantic dullness. An anthem composed entirely of canons is certainly a novelty, and one which we should be sorry to see imitated. The choral fugue is well developed, and terminates on a pedale almost worthy of Leo himself.

The Chamois Hunter. Song. By Miss Eliza Porter. London: Cramer & Co.

ONE of the most pleasing evidences of the march of intellect is to be found in the increasing mental cultivation of the fair sex, in the gradual wearing away of the degrading prejudice that woman is fit only to learn how best to bake a pudding or embroider a counterpane, as well as in the determination which seems to have inspired her no longer to submit to the intellectual tyranny which has hitherto smothered her talents, and kept her powers in abeyance. Mrs. Somerville, Mrs. Marcet, Miss Martineau, and many others have shewn, that not only in Poetry, but even in science itself, woman can come off with honour in the race, where man has hitherto arrogated to himself the sole right of entering. If in Music she has not yet been equally successful, we must assuredly look for some other cause than mental inferiority; and that cause lies, we shall probably find, in the defective method of tuition and study at present too universally employed in imparting and acquiring a knowledge of the art. As no one, how great soever his genius, can write what is worthy of lasting fame without much previous reading and reflection, so in Music, no one can hope to produce what will stand the test of time (which should be the aim of every composer who is not under the necessity of courting present popularity), unless he has studied the classical works of other times, and accustomed himself to regard *them* as models more worthy of imitation than the ephemeral favourites of an unenlightened public. The lady composers, however, appear to think themselves exempt from this condition, which to them may seem to impose the necessity of drudgery: but, let us tell them, that, as there is no royal road to science, so there is no lady's road to music. To write even correctly, much study is indispensable: to our fair friends, however, correctness is evidently a point of very secondary import-

ance. We accordingly find their compositions (as a general rule, to which at present there are few exceptions) richly *begemmed* with consecutive octaves, fifths, and other crudities, of which the merest tyro should be ashamed. The song under review is one of the exceptions; in it we observe no absolute offences against the fundamental laws of Music; yet many things which a more extended experience would either not have admitted, or else would have amended. The introductory symphony is pretty and appropriate. In the first three bars of the first movement, the voice repeats the key note no less than ten times consecutively, and so delighted seems the fair composer with this *melody*, that she afterwards reiterates it again and again, with precisely the same accompaniment, which, almost uniformly throughout this movement, gives a chord for each note in the voice, producing a very heavy and un-song-like effect. The six-eight movement gives promise of better things; the melody for the most part is elegant; the accompaniment, though not very original, appropriate, and the modulation, though somewhat common, is still correct. In some instances the base might be altered with advantage, and the accentuation of the words is sometimes faulty to a degree. Will Miss Porter not only take our advice in good part, but follow it? We assure her that she will not merely derive benefit in, but also great additional pleasure from, an art for which she seems to possess not a little natural talent.

- I.—*Sweet is the balmy Evening Hour.* A Duet for two Sopranos; the poetry by Mary Russell Mitford, the music composed and inscribed to his mother, by William Thorold Wood, Esq.
 II.—*Go gentle Zephyr.* A Duet for two Sopranos; the words translated from Metastasio, the music composed and dedicated, at her request, to Madame Malibran De Beriot, by the same.
 London: T. Boosey and Co.

EVERY musician should be a poet, not a mere poetical rhymster, but a poet in feeling and expression; for what is Music but the incarnation of poesy? bearing the same analogy to Poetry, as this to prose. Poetry is the essence of prose, as Music is, or ought to be, of Poetry. The thoughts of a poem or song suggest an image or a sentiment; it is the province of Music, by the aid of sound, to present that image or sentiment in a form more exquisite still; giving it, through the medium of melody, all the phases that imagination can propose, and by the aid of harmony, relieving the whole from monotony.

That there are amateurs in England, who understand the true purposes for which music was evidently ordained, is apparent from the two duets at the head of the present article. In each there is a true poet-like conception of the subject. The sense, or rather the sentiment, is never sacrificed to the sound, nor the sound to the sense; the one mutually aids and supports the other.

In the first duet, the lines—

"Sweet is the balmy evening hour,
And mild the Glow-worm's light,
And soft the breeze that sweeps the flower
With pearly dew-drops bright,"

suggest to the mind a beautiful evening in summer; and true to its purpose, the music seems absolutely redolent of the perfume of the flowers, after a sultry day in July. A languor steals over the balmy evening hour; the introduction to which is commenced *pianissimo*, and a gentle *crescendo* leading to a *dolce*, ushers in the subject. The time is slow of course, and the movement six-eight, being the most tranquil and soothing for all smooth and pastoral subjects.

The other duet, *Go gentle Zephyr*, is of a more simple character, reminding us slightly, in its structure, of the *Carnival of Venice*, though here its similarity ends. As a chamber duet it is particularly attractive, and being remote from difficulty, will probably become the more popular of the two. Some may consider our praise of these compositions as "beyond their desert;" but we are confident that our opinion will be verified by every accomplished musician.

The Singing Master: containing instructions for teaching singing in schools and families, the notation of music, rudiments of the science of harmony, and a selection of popular airs, arranged as songs, and also harmonized for three voices, as glees, or short chorusses, adapted, with suitable words, for the use of children, and young persons of different ages. London: E. Wilson, Royal Exchange. 1836.

EXCELLENT in plan and able in execution, this little work has for its aim the cultivation of the ear at a period much earlier than is generally thought either necessary or expedient. The author considers that the chief cause—and one of the chief causes it undoubtedly is—of the difference between the musical talents of children, is their greater or less habitude of hearing such music as they can understand, from their earliest years,—while one infant in arms is suffered to cry itself to sleep, another is constantly amused with lively nursery songs. Parents knowing this, will always make a good voice and "musical ear" a *sine quâ non* in the female attendants of young children. In teaching those of a somewhat more advanced age, such a work as the present is indispensable. Without a good guide—even supposing a competent instructor within reach—many bad habits will be contracted, which, if suffered to gain ground, are extremely difficult to eradicate. Mr. Hickson suggests the propriety of employing some instrument, such as the clarionet, to support the voice of both teacher and pupils. We should be inclined to give the preference to instruments of the violin kind, which would allow the master to sing and play at the same time, or to give hints or admonitions without interrupting the music.

After the children can sing a simple air without much practice, and not till then, the author proposes to teach the rules of the science. We are inclined to doubt whether any good end would be gained by the study of these rules, and whether the pupil should not be in ignorance of them till he can find them out by himself. This, with ordinary musical talent, he will not fail to do, from the study of the classical works of great composers; if not, they can be of no use to him. In this work the easy tirability and limited comprehension of the inmates of nurseries and infant schools, for whose use it is principally intended, is judiciously consulted, in the selection of songs short, easy, and amusing. In reply to objections on this score, he well remarks,—“there are persons who deem this application of music a degradation to the art. The author has no sympathy with them. The learned professor, with his head full of Beethoven and Sebastian Bach, would feel his dignity compromised by amusing little children with simple and lively melodies, instead of tormenting them with ingenious modulations and profound harmonies. May little children never fall into his hands.”—Towards the conclusion are some pieces of a more scientific character, culled from the works of Callcott, Webbe, Cooke, &c. Let us hope that this work will be instrumental—and in good hands it assuredly will be—in diffusing a knowledge and love of this most delightful of the fine arts, amongst the labouring classes of this country, who form so large, yet so very inadequately cultivated, a portion of the community.

MISCELLANEOUS COMMUNICATIONS.

We understand it is in contemplation to establish a society in London for the especial purpose of promoting the cultivation of the several branches of British Natural History—to make collections of the various natural productions in this country—to form a Library of Works to elucidate the science and aid the student—to correspond with, and mutually assist the numerous provincial Natural History societies—in fact, to form a nucleus for the concentration of the labours of the British naturalist. We most sincerely hope that all who feel an interest in the laudable objects the promoters of this society have in view, will at once come forward and exert themselves to promote the success of so desirable a project.

A new institution for the promotion of the fine arts has just been established at Newcastle, which is to be called “The North of England Society for the Promotion of the Fine Arts,” intended for the advancement of drawing, painting, sculpture, engraving, engineering, &c., by the purchase of casts and books, &c., and procuring an adequate place where students may work under the same roof.

METHOD OF CATCHING THE HOUSE SPARROW (*Passer domesticus*) AND
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OTHER SMALL BIRDS.—The difficulty of entrapping the House Sparrow by the usual means of catching small birds, has been alluded to by many authors. I have, however, always found that I can catch as many as I wish in trap-cages. I generally use wicker cages, made for the purpose, and have taken as many as two dozen in a single day. Indeed, scarcely a day passes that we do not take a dozen out of the trap, which is generally placed near the pea-rows in the garden. It rarely happens that an old bird is caught, though this is sometimes the case. Now and then a Robin Redbreast gets in, and does mischief by preventing the Sparrows from entering; occasionally, also, a Hedge Dunnock (*Accentor modularis*), and Willow Warbler (*Sylvia melodia*) are caught, the latter only when the cage is baited with fruit or peas. With these exceptions, I am not aware of any other species being captured in these trap-cages.—J. D. SALMON. *Thetford, Norfolk, July 28, 1836.*

[The most efficient means of destroying the House Sparrow, with which we are acquainted, is by taking them at night with bat-fowling nets. We have heard of two hundred being captured in this manner in the course of a few days.—Eds.]

THE MEALY LINNET (*Linaria canescens*, GOULD).—The Mealy Linnet is closely allied to the Redpoll Linnet (*L. pusilla*), but is larger and stouter, with a somewhat longer and thicker bill, and whitish rump; but having no sign of the pinkish tinge over the tail, so conspicuous in the Mountain Linnet. I have a live Mealy Linnet, a red-breasted specimen, but of course not very bright at this time of the year (Dec.), nor will it become so, judging from analogy with the other species. It is very healthy, but has not yet begun to sing. I have seen a specimen of it from Japan, and several from the neighbourhood of Lake Ontario. It appears to inhabit more northerly districts than the Redpoll Linnet, and is the species which Wilson describes under the name of "Lesser Redpoll Finch," as the figure in the original edition and the dimensions, he states, sufficiently testify.—EDWARD BLYTH.

SUPPOSED "COCK-NESTS" OF THE IVY WREN (*Anorthura troglodytes*).—There has been much nonsense written about "cock-nests," as some have been pleased to term them, hardly worth notice. I cannot imagine any *naturalist* believing that the male bird builds them, or that they are made for the sake of concealment. I think we should find, on examination, that the greater number of these afterwards deserted nests are built with an idea of completion, but that this jealous little bird becomes dissatisfied with the situation; and no bird is more easily caused to desert, though I know one instance where the old bird allowed herself to be handled repeatedly while sitting, and yet brought out her young. This little creature, besides its jealous nature, is particularly liable to have its jealousy aroused, from being so early a builder, when there is little covert, and from building often in low, exposed situations. I have given some attention to this circumstance, and feel assured that there is no peculiarity about it.—M. N. F.

FACTS RELATIVE TO THE TITS (*Parus*).—The chattering notes of the Garden, Blue, Coal, and Marsh Tits, can scarcely be distinguished from each other, but the first named species soon discovers itself by its "*pink, pink*." The Garden Tit is much less active and less ceaselessly in motion than the other Tits above alluded to; a fact which becomes obvious when the species are seen in company.—CHARLES LIVERPOOL, M.D. *Bristol, Oct. 16, 1836.*

DEPARTURE OF THE WILLOW WARBLER (*Sylvia melodia*) in 1836.—The

majority of this lovely little creature departed this year, as usual, about the first week in September; but we heard one at Campsall, near Doncaster, so much later as the 29th of that month; and we observed a second, the same morning, in the grounds of Michael Tasburgh, Esq., at Burghwallis, near Campsall. It is remarkable that the first mentioned individual was singing.—Ed.

THE ACADEMIE DE MÉDECINE OF PARIS AND ITS DECISION ON PHRENOLOGY.—The Académie de Médecine has been called upon to decide the important question of Phrenology. The discussion occupied four sittings, Dr. Broussais, who is at the head of the Phrenological School, maintained the principles which he had laid down in his lectures. M. Gueneau de Mussy had to sum up the arguments on both sides, and in conclusion gave an opinion that the system ought not at present to be adopted. The Academy, concurring in this opinion, deferred its decision till the system was established upon more solid basis.—*Paris Journal*.—[This sagacious decision proves to us most clearly, that the learned Academicians either *could not* or *would not* rightly understand the true science of the mind.—Eds.]

POWERS OF THE PIANO-FORTE.—Composers of solos for other instruments, seem anxious to combine every possible variety of style and expression, while those who write for the piano-forte, seem afraid of exposing its defects, and accordingly display nothing but its peculiarities. But if we consider this instrument as an amusement for home and solitude, we cannot consent to give up the sublime and beautiful for the ornamental alone, to neglect the higher and cultivate only the lower walks of the art. Played on the piano-forte, every species of music, both vocal and instrumental, ancient and modern, sacred and secular, may be more or less enjoyed. The imagination readily supplies the absent words of a finale, or chorus, previously heard at the opera or oratorio. The piano-forte seems to speak, and the qualities and tones of different instruments, seem almost distinguishable.—*Crotch's Musical Lectures*, p. 157.

HEREFORDSHIRE NATURAL HISTORY, PHILOSOPHIC, ANTIQUARIAN, AND LITERARY SOCIETY.—Under this comprehensive title, an institution has been recently formed at Hereford, and has already received most extensive patronage. The Dean of Hereford presided at the preliminary meeting, which was attended by 150 influential individuals, most of whom enrolled themselves as members.

EARLY ARRIVAL OF THE FIELDFARE THRUSH (*Turdus pilaris*) IN DUMFRIESHIRE.—The Fieldfare Thrush has appeared remarkably early this year, having already been seen here in large flocks. These pretty foreigners were first observed at the beginning of September, or even earlier. Whether the ripening of the berries of the Mountain Ash, which have been early this year, and upon which they greedily feed on their first arrival, may have attracted them, or not, I cannot say.—JAMES STUART MENTEATH, *Closeburn Hall, Dumfriesshire*, Oct. 25, 1836.—[Up to this time (Oct. 30), we have not met with a single Fieldfare Thrush in the north of England.—Ed.]

OBITUARY.—It is our painful duty to announce the deaths of two men whose names will ever be held in deserved estimation by the zoologist and botanist—Dr. Leach and Mons. A. L. de Jussieu. Dr. L. died at Genoa, of a few days' illness from cholera; Jussieu expired at Paris, at the advanced

age of eighty-nine. We hope, ere long, to be able to present our readers with some account of the valuable labours of these truly able individuals in the field of natural science.—We have also to record the demise of Edward Turner Bennett, Esq., Secretary to the Zoological Society, who died on the 21st of August, 1836, after a short illness. He is well known as the author of the *Tower Menagerie* and *Menagerie of the Zoological Society*, and as an Editor of the *Transactions of the Zoological Society*. He has likewise published an edition of White's *Selborne*, and was one of the most efficient office-bearers of the Society to which he was Secretary.

LITERARY INTELLIGENCE.

A fourth edition of Combe's admirable *System of Phrenology* has just been published. The extensive sale of this work would of itself speak sufficiently for its merit: but if we can find room, we propose giving it a more detailed notice in a future number.

Shortly will be published, with numerous plates, the *Wonders of Geology*, by Dr. Mantell, F.G.S., F.R.S., &c., &c.

A liberal subscription has been entered into amongst the *literati* of St. Petersburg, in aid of the renovation of the tomb of Shakspeare, in Stratford-upon-Avon Church. The Princess Bariatinsky is at the head of the list.

A Translation of Menzel on German Literature will shortly appear.

ABRIDGED LIST OF NEW PUBLICATIONS,

From September 9 to December 8, 1836.

- Buckland's Bridgewater Treatise on Geology, &c., 2 vol. 8vo., 35s.
- Cabinet of Modern Art, vol. 3, 1837, post 8vo. 21s.
- Cambridge Philosophical Transactions, vol. 6, part 1, 4to., 13s.
- Coleridge's (S. T.) Literary Remains, by H. M. Coleridge, 2 vol. 8vo., 21s.
- Combe's Ancient Marbles in the British Museum, part 7, 4to., 42s.
- Cooper's Residence in France, 2 vol. post 8vo., 21s.
- Craigie's (Dr.) Elements of Practice of Physic, 8vo., 18s.
- Curling's (T. B.) Treatise on Tetanus, 8vo., 8s.
- Doyle's Flower and Fruit Garden, 12mo., 2s.
- Duncan's (Dr. H.) Sacred Philosophy of the Seasons, vol. 1, 12mo., 6s.
- Edinburgh Cabinet Library, vol. 21, (Circumnavigation of the Globe, &c.) 5s.
- Finden's Tableaux, Scenes of National Character, &c., imp. 4to. 42s., l.p. 63s.
- Guy's Hospital Reports, vol. 1, 8vo., 12s. 6d.
- Hamilton's Observations on Midwifery, part 2, 8vo., 7s. 6d.
- Hooker's (W. J.) Figures, &c. of New and Rare Plants, part 1, 8vo., 14s.
- Hoppus's Sketches of the Continent in 1835, 2 vol. post 8vo., 21s.
- Higgins' Atlas of the Earth, 4to., 31s. 6d.—coloured, 42s.
- Inche's (Jas.) Letters on Emigration to Canada, 12mo., 5s.
- Ingleby's (J. T.) Tracts and Cases in Obstetric Medicine, 8vo., 9s.
- Jamieson's (Mrs.) Domestic History of France, 12mo., 7s., bds.

Jardine's Naturalist's Library, vol. 15: Parrots, 12mo., 6s.
 Jenning's Landscape Annual (Spain), 8vo., 21s.—1 p. 52s. 6d.
 King's (Capt.) Journey to the Arctic Ocean, 2 vols. post 8vo., 21s.
 Lardner's Cyclopædia, vol. 83 (Swainson's Birds, vol. 1), 12mo., 6s.
 ———— vol. 84 (Lives of Eminent Men of Gt. Britain), 6s.
 ———— vol. 85, (History of Russia, vol. 2) fcap., 6s.
 Lee's (Edwin) Account of the Continental Watering Places, sm. 8vo., 7s. 6d.
 Medical Vocabulary; Names, Terms, Phrases, &c., 18mo., 4s. 6d.
 McCulloch's Statistical Account of the British Empire, 2 vols. 8vo., 36s.
 Memoirs of the Astronomical Society, vol. 9, 4to., 22s.
 Patterson's (Capt. John) Adventures, 1807 to 1821, post 8vo., 10s. 6d.
 Paul's Journal of a Tour to Moscow, 1836, 12mo., 5s.
 Portugal and Galicia, by an English Nobleman, 2 vol. sm. 8vo., 18s.
 Quincy on Imitation in the Fine Arts, transl. by J. C. Kent, 8vo., 14s.
 Raumer's (Von) Political History of England, vols. 1 and 2, 8vo., 30s.
 ———— Contributions to Modern History, post 8vo., 10s. 6d.
 Roscoe's (T.) Wandering's through N. Wales, roy. 8vo., 28s. 6d.—India, 46s.
 Skinner's (Major) Journey overland to India, 2 vol. post 8vo. 21s.
 Smith's Miner's Guide, 12mo. with a Chart, 63s.
 Todd's Cyclopædia of Anatomy and Physiology, vol. 1, roy. 8vo., 2l.
 Williams' (Dr. R.) Elements of Medicine, vol. 1, 8vo., 10s. 6d.

METEOROLOGICAL REPORT.

SEPTEMBER.

1836 Sept.	Barometer.		Thermometer.		Remarks.		
	Morn.	Even.	Max.	Min.	Day.	Night.	Wind.
1	29.110	29.305	64	52	Fine, cloudy, windy		S. W.
2	29.000	29.200	55		Showery		Westerly
3	29.180	28.820	61	45	Fine, clouds and sun	Fine	S. E.
4	28.705	28.685	62	48.5	Showers and sun, fine	Lightning	Calm
5	28.615	28.740	60	45	Fine	Fine	Southerly
6	28.605	28.530	58	42.5	Cloudy, windy, showers	Cloudy	Westerly
7	28.965	29.145	61	42	Fine, sun	Fine	W. N. W.
8	29.100	29.080	60	45.5	Fine, clouds and sun		S. W.
9	29.100	29.145	56.5	48	Clouds, sun, showers	Rain	Northerly
10	29.130	29.270	54.5	43.5	Showers and wind	Showers	Northerly
11	29.360	29.413	55.5	40	Windy and cloudy	Fine	Northerly
12	29.460	29.500	58	46	Wind, sun, cloud	Fine	Northerly
13	29.510	29.530	57.5	44	Fine, cloudy	Fine	Northerly
14	29.510	29.515	56	46	Cloudy, shower, hazy	Fine	N. E.
15	29.520	29.505	59	47	Cloudy, light shower	Cloudy	N. E.
16	29.500	29.490	55	47.5	Cloudy, light shower	Cloudy	N. E.
17	29.475	29.455	48		Cloudy, light shower	Light showers	N. E.
18	29.415	29.400	55	44	Cloudy	Light showers	N. E.
19	29.330	29.320	57.5	45	Cloudy	Cloudy	N. E.
20	29.320	29.400	59	44	Clouds, sun, shower	Cloudy	Northerly
21	29.485	29.540	55.5	39	Fine, sun, clouds		N. W.
22		29.380	57	43	Fine, cloudy	Fine	Westerly
23	29.205	29.345	63	51.5	Clouds, sun, showers	Rain	S. W.
24	29.460	29.420	63	51	Fine, clouds., sun	Fine	Westerly
25	29.490		63	51.5	Fine, clouds, sun	Fine	Westerly
26		29.210	66	50	Fine, clouds, sun		S. W.
27	29.115	29.080	64	57	Fine, cloudy	Fine	S. W.
28	28.910	28.810	54	50	Showers	Hvy. showers	S. W.
29	28.650	28.700	57	45	Fog and rain	Fine, foggy	S. W.
30		28.900	50.5	42	Fine, showers		S. W.
Mean Max. 58.5			46.3 Mean Min.				

OCTOBER.

1886	Barometer.		Thermometer		Day.	Remarks.		Wind.
Oct.	Morn.	Even.	Max.	Min.		Night.		
1	29.450	28.230	51	39	Rain	Heavy rain	S. W.	
2					Windy, cold	Rain		
3	28.440	28.700	49	38			N. W.	
4		28.960	50.5	38	Fine, all sun	Cloudy	Variable	
5		29.255	51	40	Fine, all sun	Fine	S. W.	
6					Fine	Rain		
7	28.740	28.645	55.5	40	Heavy showers	Rain	Southerly	
8	28.640	28.680	55	50	Fine		Southerly	
9	28.600	28.665	54.5	43	Cloudy	Showers	S. W.	
10	28.510	28.630	56	45	Sun, showers	Showers	S. W.	
11	28.545	28.680	54	47.5	Very windy, fine	Showers	Westerly	
12	28.815	28.275	53.5	43	Wind, clouds, showers	Showers	S. W.	
13	28.420	28.640	55	43	Very windy, fine	Wind	Westerly	
14	29.090	29.225	55	47	Sun, clouds	Rain	Westerly	
15	29.130	29.310	55	45	Fine, sun	Cloudy	Calm	
16	29.500	29.500	55.5	43	Fine, sun, clouds	Fine	Calm	
17	29.460		58.5	49.5	Cloudy	Fine	S. E.	
18	29.430	29.440	60	51.5	Cloudy	Cloudy	Southerly	
19	29.565	29.750	55	49.5	Fine, sun	Rain	Variable	
20	29.750	29.650	51	40	Fine, all sun	Fine	Southerly	
21	29.610	29.630	55	47	Fine, clouds, and sun	Cloudy	Calm	
22	29.715	29.750	54.5	45	Very fine	Fine	Southerly	
23	29.750	29.740	56	46	Fine	Fine	Northerly	
24	29.730	29.660	54.5	51	Cloudy, foggy	Cloudy	Southerly	
25	29.610	29.580	53.5	47.5	Fine, cloudy	Cloudy	Calm	
26	29.510	29.285	51.5	45.5	Cloudy	Fine	Westerly	
27	29.105	29.350	46	43	Windy, fine	Windy, shower	N. W.	
28	29.100	28.960	40	33	Light snow	Fine	N. W.	
29	29.010	29.300	36.5	31.5	Wind, snow showers	Snow showers	North	
30	29.420	29.420	40.5	32	Fine, all sun	Fine	North	
31	29.450	29.470	39.5	29.5	Fine, all sun	Fine	North	
Mean Max. 55.0					43	Mean Min.		

NOVEMBER.

1886	Barometer.		Thermometer		Remarks.			
Nov.	Morn.	Even.	Max.	Min.	Day.	Night.	Wind.	
1	29.400	29.320	48.5	34	Cloudy, light rain		S. W.	
2	29.280	2.300	54.5	47	Cloudy, fine	Cloudy	S. W.	
3			54	38	Cloudy, hail			
4	28.855	28.630	45	38	Cloudy, showers	Fine	N. W.	
5	28.500	28.740	43	38	Fine, sun, windy	Showery	W. N. W.	
6	28.750	28.790	42	32	Showery, snow and rain	Fine	W. N. W.	
7	28.950	29.220	42	31.5		Fine	N. W.	
8	29.320	29.420	43	31				
9	29.310		53	34				
10	28.940	28.880	53	38				
11	28.730	28.980	54	35				
12	29.180		55	36				
13	28.970	28.940	60	35				
14		29.220	53	45.				
15	29.390	29.410	52	47				
16	29.290	29.990	53	40				
17	28.800	28.510	52	38				
18	28.530	28.630	50	34				
19	28.680	28.870	42	31				
20	29.220	29.470		33				
21	29.510	29.330		30				
22	29.330	28.915		33				
23	28.605	28.800	43	38.5	Fine, high wind	Wind and rain	W. N. W.	
24	28.810	28.950	42	35	Fine, windy	Fine	Westerly	
25	29.040	28.825	37	31.5	Foggy, sleet, &c.	Clear, fine	Light, vble.	
26	28.630	28.620	47	32	Foggy, rain	Rain	Light, vble.	
27	28.815	28.600	52	44	Fine, cloudy, rain p. m.	Rain	Westerly	
28	28.480	28.460	51	50	Rain, thunder	Heavy rain	S. W.	
29	28.150	28.790	53	47	Rain, boisterous wind	Heavy rain	S. W.	
30	28.810	29.100	47	41	Rain and fog	Rain	S. W.	
Mean Max. 49					37.2	Mean Min.		

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